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THE
GARDENER
AND
PRACTICAL FLORIST.

SECOND VOLUME.

1843.

"Gardening is the most rational of all recreations. It teaches forethought, industry, and economy of time. It exalts the mind, invigorates the frame, and constantly reminds us of the great God, whose hand is imprinted on every leaf, and who, in His bountiful goodness, rewards us with the fruits of the earth. To teach the cottager to manage his garden is to lead him to happiness; to induce the higher classes to love flowers, is to find them innocent gratification, and provide employment for thousands."

LONDON:
RICHARD GROOMBRIDGE,
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PREFACE.

HAVING now completed a Second Volume, we naturally turn back to our promises and performances, with a view of considering how far we have redeemed our pledge. At the close of our First Volume we promised a Series of Treatises on the Culture of Flowers, Fruit, and Plants: each monthly part has contained evidence of our intentions to fulfil the engagement, and proofs, that so far as we had proceeded, we were equal to the task.

In the whole range of Floral works there are not more complete, more plain, nor more popular Treatises, than those of the Fuchsia, the Heath, Geranium, Dahlia, Rhododendron, Rose, and the Honeysuckle, although there are distinct works on the subject of some of them published at a great price, and completely beyond the reach of ordinary Gardeners. The Treatises in this volume, like most of the Editorial papers, are founded on practical knowledge, and the majority are written by an avowed enemy to all theory but that which is founded on practice.

In many of the Floricultural papers there is no difficulty in recognising the pen of Mr. GLENNY, and the simple fact, that since his return to the Editorial department of the "Gardeners' Gazette" his contributions to this work have, both in number and interest, increased rather than diminished, must have altogether dispelled the fears of those friends who fancied that the "GARDENER" would be in anywise treated as a secondary work.

There are in THE GARDENER many anonymous papers; this arises from the fact, that some of the best practical Gardeners in the kingdom, whose situations prevent them from publishing under their own Names,

contribute to the work, and the Editor may be permitted, perhaps, in boasting of the number and value of the more important articles, to challenge the very best writers to produce any one work which possesses in the estimation of an unprejudiced person so much valuable information on the subject of Practical Floriculture.

THE GARDENER AND PRACTICAL FLORIST was designed for a standard work, and its circulation—altogether without a parallel in the history of Garden Literature—is perhaps the best evidence that can be adduced of its acceptance by the public as a complete Horticultural Library of useful knowledge.

To many, whom the Editor has no other means of thanking, he begs to tender his grateful acknowledgments, not less for valuable extracts than for original communications.

With a view to render each succeeding volume more acceptable than the last, much space will be devoted to the subject of laying out Gardens, not as if the only persons who require this were those who possessed large domains, but as if every man who had a plot of ground before or behind his house desired to make the best use of it.

With these sentiments the Editor launches the Second Volume, simply requesting those whose province it is to lead the public mind to the perusal of new books, to look at THE GARDENER AND PRACTICAL FLORIST as a work without any other pretensions than that of teaching the knowledge of Gardening to those who desire to learn it, and in such plain homely language, as not only the Cottager, but the child of the Cottager shall be able to understand.

November 21st, 1843.

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THE GARDENER

And Practical Florist.



Encyclopædia of Flowers.

CULTURE OF ROSES IN POTS.

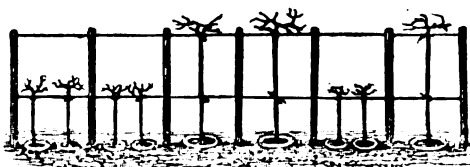
IN the early part of 1832 I began to grow Roses in pots, and the inducement I had was the desire to introduce them at shows; for with all the beauty of Roses in bunches, there were in my opinion many objections to that mode of showing, among which the appearance they made at exhibitions—and which was more like bunches of flowers for sale in a market than any thing else—was one, and the gross unfairness which this plan was calculated, if not absolutely intended to cloak, was another. It was before I had influence enough to force the Floricultural Society to divide the classes of amateurs and dealers, and therefore, a man with acres of Roses could come down with bundles as large as cauliflowers, while the amateur, who, like

myself, had but a few dozen, could only put up two or three blooms in a bunch. It was this fact, which some considerable time after, made me anxious to show them in pots at the Chiswick Gardens, and I flattered myself that if I could show the Roses on their own trees, I should accomplish the double purpose of exhibiting unfaded flowers, and let the public see the habit of the plants. Of course I was disappointed when the prize promised for the best twenty varieties was withheld; and at the time, either in the *Floricultural Journal* or the *Gardener's Gazette*, (for I am writing where I cannot refer, but I have reason to believe the former,) I told the council what I (and scores of excellent gardeners and nurserymen whom I

consulted) thought of the proceeding. The twenty Rose-trees made a very pretty exhibition, and if I judge from the number of persons who surrounded them all the morning, they were among the most attractive subjects of the day. I need hardly say, that although I have grown Roses in pots ever since, and forced them at all seasons, I did not show them any more, nor did any body else for a considerable time, though I have since seen very pretty collections from Messrs. Lane of Berkhamstead, and brought into bloom at unusual seasons, shown at the Society's rooms as well as the Gardens, and observed the awards of some four or five medals for them. It may be somewhat egotistical to say, that scarcely one improvement has been adopted at the Horticultural shows which has not been adopted in consequence of my repeated suggestions and remonstrances, industriously forced upon their notice by precept and example. But "facts are stubborn things," and if any impartial person will look back to articles of mine, called by those who were censured, abusive, he will be convinced at once. They were called abusive, simply because they were unanswerable, and were followed up with a degree of earnestness quite unusual among the writings of other persons; they were the more formidable too, because they were founded on practical experience and on justice. But, to the affair of showing Roses in pots, for which "improvement" the *Chronicle* gives great praise to the council. I will yield to them the merit of adopting a thing years after they ought to have done so, but it must be upon the principle of "better late than never;" for if obstinately refusing a prize for Roses, because they were grown in pots, and putting up with bunches of stale flowers that would disgrace a stall in Covent Garden, for years, that the fact of their unhandsome blunder might blow over, entitle a council to any thanks from the friends of science, let those who admire the thing thank them, I do not. Never did the editor, however, make a greater mistake than to imagine there was more difficulty in growing a Rose than a geranium; and I can inform him—if some of his correspondents have not done so already—that although the learned twaddlers who help to mystify the most simple operations in gardening may be, as they seem to be, a little at fault, there are hundreds of gardeners round the metropolis to whom the thing is as familiar as the growing of cabbages, though not done in quite such a wholesale way. My attention was first drawn to the subject, by seeing the fine specimens grown and bloomed in pots by French gardeners, who, from the tall standard and the lofty climber to the smallest dwarf, produced them as beautiful as in the open ground; for although the flowers were not quite so large, the plants were small in proportion, and the effect much better, than if there had been the ram-

pant growth which a rich soil and an established situation in the ground will always produce. To say how the thing was managed in my case would be almost insulting to good practical gardeners, who know perhaps better than I do how to cultivate them in pots, but they who do know, must consent to give up a small space in "THE GARDENER AND PRACTICAL FLORIST," for the information and benefit of many amateurs and young gardeners who do not. This had been more in place, perhaps, if it had appeared in autumn, or even in the summer, because many who have not now prepared themselves for it, might have been induced to try their hands at it the first season. However, such as have plenty of Roses in the open ground may, with many kinds, still be successful, if they do thus late, what had been better done in the autumn, and they may even buy in strong plants for the purpose now.

At the end of the summer, when the leaves of deciduous kinds were turning yellow and falling, I took up carefully all the plants that were likely, from their size and sort, to answer my purpose. The roots of some were straggling, and the whole required some pruning to adapt them to pots of a size consistent with the plants. I shortened all the wood of their heads to three eyes, or, if they were short jointed, to four eyes; and I cut close to the stumps, and quite clean away, all the branches but five or six, which I took care should be those which stood out in different directions. I then potted them in loam, which was formed out of several loads of thickly cut turfs, perfectly rotted, which loam I consider to have been much the same composition, without any assistance, as, in the ordinary way of gardening, would be described as half loam and half leaf mould. In potting them I used pots as small as would well carry the plants, and in most cases this would only just hold the root when cut in somewhat closely. In most cases a twenty-four sized pot carried a tolerably fine dwarf, or dwarf standard, and in hardly any case did the finest plant require more than a size sixteen. When they were potted, and the soil rammed pretty close among the roots, and filled within an inch of the top, I plunged them in the open ground, where they had all the sun and rain; and I secured the standards well to a series of stakes and rails like the annexed.



Here they remained until January, when I removed some I intended to force, into a cold greenhouse, one in which no fire was ever placed, except actually to keep out frost, and the tem-

perature was kept always as low as it could be to insure that object. Here there was no perceptible difference but the swelling of the buds during several weeks. At the end of February I removed some to the coolest part of a moderate stove, ranging perhaps in the warmest part sixty deg. in the day, fifty to fifty-five in the night, and depending for its heat entirely on the tan pit. Here I cut each shoot back to two eyes at the most; when they began to grow I placed them in the warmest part, and near the glass. I gave them all the air I could on warm days, and especially when the sun was out. I found it necessary to fumigate the house, and syringe the trees with clean water the same temperature as the house, several times, almost as soon as the green leaves appeared, for they were dreadfully attacked by the *aphis* or green fly. Once a fortnight I added more from the greenhouse, and replenished the greenhouse with plants from outside, and thus kept up a very excellent succession ready for any purpose. When they came into bud, and those buds were forward, I removed them into the conservatory, which was some degrees lower in temperature, and, except frequently removing them to fumigate and syringe them, on account of the *aphis*, they remained there to bloom. I found on all occasions that deciduous Roses were the most difficult to bloom fine, and to prevent from drawing into weakly shoots, except the hybrid perpetuals, of which there is a great variety, which are the best of all for blooming in pots, and most of them force well; but the principal object was to give them as much air as was consistent with the necessary excitement, and always to take care that they were kept moist, for neglect of watering is fatal. Those remaining out of doors in their pots made rather less progress as the season advanced, than the Roses that had not been disturbed; and that they should come about the same season as those in the ground, I placed them in the greenhouse in April, for they required to be hastened, and were easily kept clear of grubs and flies by fumigating and syringing, while those in the ground often suffered considerably for want of so efficient a mode of getting rid of such pests. I need hardly say to those who have seen them in bloom, that I could hardly hope for improvement. Mr. Cox was my gardener, and I may safely say (though my office may have savoured something of the bellows blower's), that we could show Roses grown in pots with most people who grow in the open ground, and on one occasion, when I had the medal awarded for Roses in bunches, we cut the principal kinds from plants bloomed in pots*. I now come to climbing Noisette and hybrid Roses, which, as the majority were like China Roses, always growing, required different, and not such troublesome treatment.

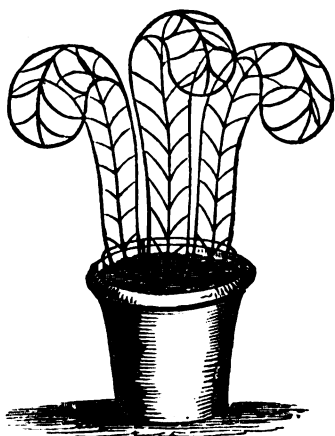
* I have heard that Messrs. Lane have frequently cut their principal bunches from plants grown in pots.

Of these I often took established plants from the open garden, cut the roots in a little to get them into pots as small as I could well plant them in, and pruned them very close. These I put into a pit which I could cover very close up in bad weather. I propped them up by standing them on the bottoms of other pots, so as to be as close to the glass as possible, not to touch. Fumigation and syringing were the principal operations required, and opening the glasses on all mild and dry days; they did well until Christmas. I then removed them all into the greenhouse, where they continued growing, merely taking care to shorten any branches that appeared more vigorous than the rest of the plants. The Banksian, and several of the Noisette kinds, as well as some of the principal small flowering climbers, were trained to single stakes, three or four stems being tied close to the stake all the way up, and the side shoots were allowed to grow and bloom, forming a complete pillar of bright foliage, and subsequently becoming a mass of flowers. Such of those smooth wooded kinds as did well on the common briar, and were grown as standards, were allowed to form drooping heads, the only support I gave them being to secure them from being broken by their own weight, and some of the Noisette kinds formed when thus grown very beautiful objects. When I wanted to force them to bring them to a particular time, I found I had only to place them first in the coolest part of the stove, and after they had been some days there, removing them to the warmer, and again, when they were to be inured to the greenhouse, putting them to the cooler place before they were taken out; and thus far I found no difficulty in growing, in pots, plants which had been as much as three years in the open ground, and varieties which hardly any one would expect to see flourish in so confined a situation. The principal objects to be secured are, first, good rich loam and leaf mould, or more properly speaking, leaf manure well rotted, in equal parts; next, to have them rather confined than otherwise by the side of the pot, and the soil rammed pretty close among all the fibres; thirdly, the instant a single *aphis* can be seen, to prepare for fumigating and syringing; fourthly, to keep them in all cases as near as you can to the glass while growing; fifthly, to give as much air as possible when the out-door temperature will admit of it, and especially when the sun shines; sixthly, to water them regularly, and never let them flag.

It is the custom to give roses plenty of dung and abundance of room when growing them out of doors; but this would create an excitement which is not desirable in pots; for a vigorous growth, so desirable in the open garden, would be inconvenient in pots, where abundance and early development of flowers, without too much foliage, is more desirable. I had once a French gardener call, and having admired the

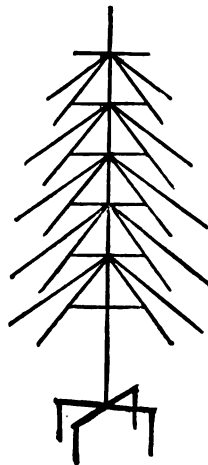
growth and bloom of some kinds, which rather surprised him, he inquired as to the treatment; when I mentioned about pruning away a good deal of the root to make them go into a pot, he took one out of the ground, one of *Rose du Roi*, known better perhaps as Lee's perpetual crimson, he literally cut away the roots to a stump, to show me how they potted them for forcing in France. This he did, as he said, to convince me that I never need fear the pruning of roots would hurt them; however, I prefer to be somewhat less violent in my operations, and I have no reason to change my plan, while I can grow roses well enough to please me my own way.

With regard to the commencement of pot culture with young plants of the China kinds, there is but little trouble. They are furnished by the Rose nurseries already potted in small sized pots, and, generally speaking, there is none too much root. It is better to put them in a pit near the glass, say within four inches of it at the most, and when the pots are pretty full of roots, to change them to others one size larger, without breaking the ball of earth, and fill up the vacancy round it with the compost I have mentioned. Shorten all shoots that are growing too fast for the rest of the plant, for it is necessary to keep them of a good form. In like manner with climbers, if one shoot takes the lead, the others will hardly move; but according to the form you intend the plant to be trained, so you must encourage a bushy or a lengthened habit. If it is to cover a flat ornamental trellis, one shoot must not be encouraged at the expense of the rest, because you want several branches to grow at the same time, and these must be disposed where they are wanted, as they grow; for if they are allowed to grow much before they are trained, they will be found very awkward, if not unmanageable altogether.



The above trellis would require a Rose grown on its own bottom (as it is called when it is not

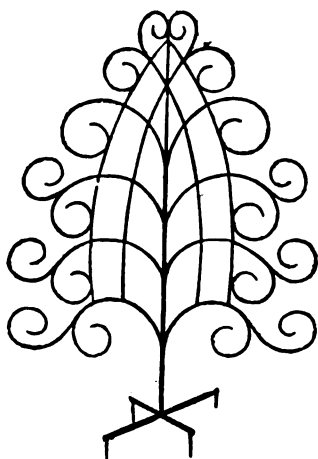
grafted but grown from a cutting or layer), and should be cut down pretty close to the pot, that it may grow bushy from the bottom. By selecting, then, three of the best shoots to train up the three compartments, the side shoots of these will generally be found to fill the trellis; but as the great object is to cover the frame as soon and as full as possible, as many shoots may be used as will cover all the way they grow. The annexed is another kind of trellis, which would require the upright stems to be tied close into the middle standard, as high as where it branches off, and then spread upon the wire work.



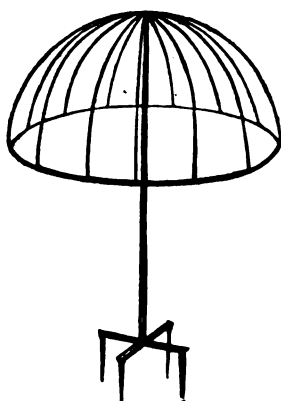
Upon the same plan, a trellis like the following would be a pleasing variety; but the fancy of growers might be exercised to a vast extent in the form and fashion of these adjuncts. It may be as well to mention here that a series of trellises, which we have seen hooped to the pots themselves, are calculated to mislead the young cultivator very much. The very existence of some plants depends on the occasional shifting of the pots and additions of soil; and it is difficult to conceive how any body in his senses could recommend trellises to be fixtures to the pot. The engraver has not given a very good idea of the length which the spikes of these standards should be, for it is intended that the cross should be nearly as large as the pot will take; and the spikes, which should be thrust down into the pots, should rather slope inwards. The real object of employing standards of this kind is, that the plants can, when they require it, be shifted to a pot a size larger without disturbing either the trellis or the plant; and having used them some years, without finding the least inconvenience, I prefer them to any other I have seen.

In this the spikes, instead of being represented long enough to go down to the bottom of a flower pot, are merely indicated. They ought to be stout, rough, and very little pointed, that they may have firmer hold of the soil; and

according to the size intended to be ultimately in, so they ought to be adapted: one that will



but just go into a thirty-two sized pot, will bear shifting into a twenty-four and sixteen; one that will but just thrust down into a twenty-four sized pot, would bear shifting to a sixteen and a twelve, for the ball and trellis will leave the old pot together, and can be transferred to the new one without difficulty. The next kind of trellis is one adapted for a standard Rose, worked on a briar, the head of which ought to be just above the dome, and all the young shoots be trained over it.



This makes a beautiful object for all free growing or climbing Roses, and for Noisettes. The branches will completely cover the trellis, and may be made to hang down considerably below it, and some kinds will be liberally covered with flowers. It will be found that worked Roses will generally do best—that is, Roses grafted or budded on stocks; and the briar, notwithstanding a good deal that has been said to the contrary, will be found the best stock for potted Roses. The last plan of a trellis is also good for climbing Roses, the branches of which can be tied round the centre standard, and grown

through the top, to be trained over it, as in the case of a standard tree.

The varieties of Banksian Roses, which are almost as beautiful as any of the whole tribe, may be flowered in 32-sized pots, and be grown on ornamental trellises three feet high, but they will not flower profusely until the pots are pretty full of roots, others will require 16-sized pots, and form a round pillar five feet high; but I found all the larger growing climbing roses do better merely bunched up round a stake near four feet high, and the tops being shortened, the upper branches trained over a sort of umbrella-shapen or headed trellis, and allowed to hang down all round. These may be formed according to fancy; but the foregoing are specimens of several plans, which may be wonderfully varied, according to the taste of the grower.

If Deciduous, or, as they are sometimes called, Garden Roses, all of which are rough wooded, and generally, except perpetuals, bloom in June, are purchased to be grown dwarf in pots upon their own bottoms, that is to say, roses which are not worked on briars, or other kinds of stock, they must be treated according to their strength. If they are bushy, cut out all the weak branches, and plant them in the soil we have mentioned, precisely as if you were taking them for your own garden, cutting away each branch to three or four eyes, and when the buds swell, again cut to one or two eyes, they will make strong wood for next season, and perhaps bloom; but unless they are strong plants they will not make much of a show the first year, and had better be allowed to stand out plunged in the ground, and not be forced until the year following. Those, however, who intend to go to pot culture with a whole collection, will do well to plunge them all in the ground, and let them take their chance until they indicate their quantity of bloom, when they may select all that show a sufficient number of buds, and remove them into the greenhouse to finish their flowering, as they want all the attention we have already pointed out if they are to be exhibited; but those which do not indicate sufficient bloom for exhibition, will, unless injured by the fly or grub, make stronger and better wood out of doors, and the greatest care must be taken that they never suffer for want of water. If they are troubled with the fly or grub, it is better at once to remove all of them to some apartment in which they will be properly fumigated; and if this cannot be done, syringe them day after day with tobacco water in the evening, and clear water the next morning, until they are clean. Pots which are plunged should be repeatedly turned, and even taken up, lest the roots go through the holes and establish themselves in the ground; because when this is the case, they grow too fast and too strong, and then when removed suffer greatly from being se-

pared from the new made root, which has been supplying the principal nourishment.



Those who take delight in the Rose as a window plant should pot them immediately, and having attended to those directions which apply to every living plant, the necessity of a good drainage at the bottom, they may fill every window in the house; let the most minute directions I have here given be attended to, and instead of hastening a bloom out of season, do not remove them from where they are plunged until the end of April, for it is useless to attempt the forcing of roses in dwelling-houses, but in May they will come into leaf, and the greatest care must be taken, much more than is usually taken, that they never suffer for want of water. If they are kept inside the window, the window must be open always in mild weather but never on a frosty day, because being a little forwarder than those which are exposed to the air night and day, the young shoots may suffer; on the other hand if never brought inside the window they will take no harm exposed. The China Roses and many others of the smooth wooded kind are tender, and they must, besides the treatment already mentioned, so far as potting is concerned be always kept inside, except in very fine weather. If for instance they are bought immediately they must be kept inside the

window altogether in the night and whenever the wind is cold, to say nothing of frost which will hurt all the ends of their shoots and destroy a month's growth in a few minutes. Watering and not putting them in saucers in the water which drains through, but always setting them dry by some contrivance or other, (as standing in water is injurious) must be attended to. In this way they may be grown the summer through, simply giving them all the air that can be given in fine weather: when done blooming in the warm months, place them on the ground out of doors until they make fresh growth, when they may be brought into the window again, and placed inside or out until they have once more spent their flowers. The China or smooth wooded kinds will require repotting in pots a size larger as soon as the pot fills with roots, but only until the plant is as large as you wish it, when it may be kept within the size by constantly taking away the weak shoots and cutting back the strong ones. Those who propose to purchase a few, may make their selection from the following,—which as the generality of Roses are, may be considered the best for pots, and as their colours and characters are mentioned, the choice may be left to the buyer, I would just observe that I hope the time will come when three-fourths of even those now best, will be banished for better ones, but the time has not yet come, and these, selected out of perhaps a couple of thousand, may save the buyer the trouble of guessing which is the best in a trade catalogue.

I have simply to add, that Mr. Rivers, of Sawbridgeworth; Mr. Lane, of Berkhamstead; Mr. Paul, of Cheshunt; and Mr. Hooker, of Brenchley; are the principal Rose growers, and the following, or any part of them, may be had in time to make a good show this ensuing spring or summer. I recommend dwarf standards, on briars, for the beginning, as being most safe to do well thus late, but the nurserymen will, if informed of the object, suit their plants to pot culture.

HYBRID CLIMBING ROSES.

| Name. | Colour. | Form and Character. |
|-------------------------------|-----------------------------|----------------------------|
| Astrolabe | bright rose | compact and very double |
| Miller's Climber | bright pink | expanded and double |
| Queen (Rivers) | dark purplish crimson | cupped and double |
| Sir J. Sebright (Rivers) | light crimson | cupped |
| Watts' Climbing Provence.. | rose | globular, large and double |

The Banksian Roses are also excellent climbers.

PERPETUAL, OR AUTUMNAL ROSES.

| | | |
|-------------------------|------------------------------|-------------------------------|
| Antinous | dark crimson | cupped and double |
| Bernard | salmon and rose | cupped, small and very double |
| Clair du Châtelet | purplish red | globular and double |
| Crimson | light crimson | cupped and very double |
| La Mienne | deep rose | compact and very double |
| Striped Crimson | crimson, striped white | cupped and very double |

HYBRID PERPETUALS.

| Name. | Colour. | Form and Character. |
|------------------------------|--|---------------------------------|
| Aubernon | pale crimson | expanded, large and double |
| Count de Paris | lilac red | globular, very large and double |
| Duc d'Aumale | bright red crimson | cupped, large and double |
| Duchesse d'Nemours | glossy blush | cupped, large and double |
| Fulgorie | bright rose | globular, large and double |
| Madame Laffay* | crimson | cupped, very large and double |
| Miss Elliott | pale lilac pink | large and very double |
| Prince Albert | red lake shaded | globular, large and double |
| Queen Victoria | rosy lilac, scarlet centre | cupped, large and double |
| Rivers | rosy pink | cupped, large and double |
| Sisley | bright rose | cupped, large and double |
| William Jesse | crimson, slightly tinged lilac | globular, very large and double |

BOURBON ROSES.

| | | |
|-------------------------|-----------------------------------|--------------------------|
| Madame Nérard | pink, with light margin | expanded and double |
| Psyche† | light crimson | cupped, small and double |

CHINA ROSES.

Where a bed of Roses of any particular colour is required, those marked (*) are well adapted.

| | | |
|-------------------------------------|---|---------------------------------|
| Alcine | fine red, slightly tinged with purple | cupped, very large and double |
| Caroline de Berri | blush white | compact, large and double |
| Comtesse d'Arberg | white, buff centre | cupped and double |
| *Cramoisie eblouissante | vivid crimson | expanded and very double |
| *Cramoisie supérieure | reddish crimson | cupped, large and double |
| Carmin d'Yebles | carmine | cupped, large and very double |
| *Fabvier | fiery crimson, striped white | cupped and semi-double |
| *Henry the Fifth | vivid scarlet | cupped and double |
| Icteros | creamy white | globular, large and double |
| *Infidelites de Lisette | fine white | globular, very large and double |
| *La Camöens | pale rose, slightly tinged lilac | cupped, large and double |
| Madame Brehon | bright rose | globular, large and double |
| *Marjolin (du Luxembourg) | purplish red | globular, large and double |
| *Napoleon | shaded blush | cupped, very large and double |
| Triomphant | deep rose and crimson | globular, large and double |

TEA-SCENTED CHINA ROSES.

| | | |
|--------------------------------|--|------------------------------------|
| Amelia d'Abruncourt | creamy white | globular, large and double |
| Antaros | creamy white | cupped, very large and double |
| Bougère | pale rosy bronze | globular, very large & very double |
| Bride of Abydos | white shaded rose | globular and very large |
| Blush | blush | globular and double |
| Bardon | white, tinged with salmon pink | globular, large and double |
| Belle Allemande | cream shaded blush | cupped, very large and double |
| Caroline | del. pink; rosy centre | cupped and very double |
| Comte d'Osmont | white | globular, very large and double |
| Charles Reyband | shaded French white | globular, very large and double |
| Comte de Paris (Lux) | rose | globular, large and double |

* Madame Laffay, in a good soil, will grow from 4 to 5 feet in the course of a year, answering well for training on arches, trellis-work, &c., being perfectly hardy, and giving out autumnal bloom, a great desideratum; Gloire de Rosaméne is also well adapted for this purpose, blooming in large clusters, but is not quite so hardy. Others in this class will doubtless prove suitable for this purpose; but we wish to give them a trial of another season, before speaking positively thereon.

† This variety will not grow more than about one foot high, therefore should be planted round the edge, or a bed should be devoted to it; it is likewise well adapted for pot culture in a green-house.

| Name. | Colour. | Form and Character, |
|---------------------------|----------------------------------|-----------------------------------|
| Diana Vernon | white | globular, large and double |
| De Valmonge | delicate white pink | cupped and double |
| Delphine Gaudot | white | expanded, large and double |
| Devonienses | creamy white, pale buff centre.. | cupped, large and double |
| Emma de St. Joseph | white | compact and very double |
| Eliza Sauvage | fine deep straw colour | globular, large and very double |
| Fouchier | lilac pink | globular, large and very compact |
| Fleuris Beluze | French white | cupped, large and double |
| Gama | lemon | globular, large and double |
| Gonda | creamy white, pale buff centre.. | expanded and large |
| Goubault | pale, salmon shaded bright rose | cupped, very large and double |
| General Valée | creamy white, flesh centre ... | cupped and very double |
| Hardy | vivid rose | expanded, large and double |
| Hamon | blush; shaded crimson | globular, very large and double |
| Julie Mansais | pure white | globular, large and double |
| Josephine Malton | creamy white, pale buff centre.. | cupped, large and double |
| Leveson Gower | pale yellow | globular, large and double |
| Lepage | lemon white | globular, large and double |
| Madame Jolly | white, blush tinge | compact, large and double |
| Maria Hamon | pink shaded | cupped, large and double |
| Maria de Medicis | pinky buff, shaded | globular, large and double |
| Madame Droulin | red pink | cupped, large and double |
| Madame Rhohan | rich cream | globular, large and double |
| Mansais | nankeen | cupped, large and double |
| Melville | buff and crimson | cupped, large and double |
| Mirabile | fawn and rose | expanded and double |
| Mimi | rich cream colour | cupped, large and double |
| Moiré | pale yellow | globular, large and double |
| Niphétos | pale lemon | globular, large and double |
| Queen Victoria | pale yellow | globular, large and double |
| Reine de Bassora | cream and blush | globular, very large and double |
| Robert Bruce | buff white | globular, large and double |
| Silène | changeable crimson | expanded, very large & very dble. |
| Smith's Yellow | pale straw | globular, large and very double |
| Strombio | cream and blush | globular and very large |
| Triomphe du Luxembourg .. | buff and rose | cupped, large and double |
| Yellow or Flavescens .. | pale sulphur | cupped, large and semi-double |



WEEKLY JOURNAL OF GARDENING.

RANUNCULUSES.—In ordinary seasons these should be planted some time between the 14th and 28th February, such a season as the present they were better out of the ground than in it. The earth which according to our previous directions has been thrown out of the beds should be returned to them, and there should be a good two inches of rotten cow dung put in all over it nine or ten inches from the top. It is right to level the surface of the soil used, when there remains ten inches to be filled, and to rather press it level. The dung is then to be spread over it smoothly, and the remainder of the soil returned and it should not be higher than the edge of the path itself; then stretch a line from one end to the other about three inches from the edge, and with the corner of a hoe draw a drill two inches deep, and at the bottom of this drill place your ranunculus tubers, pressing them slightly to make the points go into the ground—let them be three or four inches apart in the row; then stretch your line six inches from the first row, and plant a second in like manner, and so continue until you have filled your bed, which should be three feet six to four feet wide; and the last row will come three inches from the opposite edge of the bed. Then with the back of the rake draw some of the earth into the drill to cover the tubers an inch and a half deep; this will leave them a trifle below the level of the bed. In planting Ranunculuses some put a little cone of silver sand over each root, others make a little hole with their thumb or finger at the bottom of the drill, and fill it with silver sand, so as to place the tubers as it were in the middle of sand when covered with the cone. Their idea, as we have heard them explain it, is that the roots or tubers grow cleaner and better, and come up easier; but this is a fallacy, the soil they grow in ought to be very clean, very rich, and not by any means heavy, therefore nothing could agree with the roots better than the earth itself; the only real use there is in the silver sand is to save us the trouble of cleaning the tubers when they are taken up, and we have no desire to save trouble at the expense of the plant. It is quite certain the earth cannot be too close to the tuber, and the sand is very likely to form a hollow place by washing into the soil below, and at all events can hardly ever, from its different nature, be of the same degree of moisture as the rich earth around it. Now as new tubers form and grow it cannot be altogether a matter of indifference what soil they come in, and indeed as a proof of this they sometimes come in another place and not by the original tuber. For instance if they are planted too deep they will develop new tubers at the right depth, and if they are too shallow they will make what is called drop-roots, that is to say roots or tubers lower than the original; and this very disposi-

tion to grow where it likes is an argument in favour of keeping the soil they grow in uniform—we by no means recommend sand.

ANEMONES.—These are much bolder and stronger plants than ranunculuses, and will grow any where, but they may be treated in all respects like them, except that six inches apart every way is near enough for them, and that the drills may be filled level at once after planting. The anemone and ranunculus may be bought at the seed shops, the former by weight, the latter by the hundred; and a few to begin with, by those who would wish to try them, would come to very little money. Mr. Alexander, of Lamb's Farm, Kingsland, has the best assortment of show ranunculuses, and the very best old established flowers are not costly. There may be others as good as him, but, as we can only know people by their advertizements, it is not our fault that we give him the preference.

In all things not mentioned last week's directions will do: you must procure 12-size pots for your carnations and piccotees, and prepare the carnation sticks, which are best made by carpenters; they ought to be cut out of three quarter inch stuff, square, and be planed tapering to three eighths at top, and be four feet long.

In the GREENHOUSE and CONSERVATORY it will be necessary to have occasional fires, to get rid of the damp, which will now be fatal to tender plants if allowed to accumulate; and this caution is the more necessary as the mildness of the weather might otherwise induce neglect of this important subject. If the weather prove warm and wet the windows may be opened a little, even while the fire is going. If the sun shine much, of course there will be no need of fire; but a fire may be quite as necessary with the glass at 50, with no sun, and considerable wet, as it would be with the glass at 32. There is as much mischief done with damp as with frost. Take care that all flowering plants and specimens are occasionally turned round, and that their branches are not cramped, especially those plants destined for exhibition; give as much air as possible on mild days, and wherever it can be done out of the wind it should be done, even on moderately cold days. If the weather be mild, and there be no wind, choice specimens of Erica and Botany Bay plants may be taken outside several hours daily with great advantage, and removed back at night. The exhibitor should think nothing of this trouble. It is time to regulate the blooming of flowering plants, which can always be hastened if necessary. Plants which are the most impatient of heat will, nevertheless, bear a few hours each morning in the stove, if shaded and removed back to the conservatory in the middle or after part of the day, and when a subject is too backward this will be found of use; we have thus hastened the blooms of hard wooded plants.

March 4, 1843.

ON THE INCLINATION OF
VEGETABLES TOWARDS THE LIGHT,
And on their tendency to avoid it.

BY M. DUTROCHET, PARIS.

THE fact of the tendency of the stalks of vegetables to incline towards the light, is known by all the world; the fact of the tendency which they sometimes manifest to fly from the light has really not yet been scientifically considered; though its discovery, due to Mr. Knight, may be traced back to 1812. That observer had been conducted to this discovery by remarking the direction which the tendrils of climbing plants take. Those tendrils incline towards the solid bodies which are in their vicinity, as if they were attracted by them. Now, Mr. Knight has proved by experiments that this phenomenon of special tendency is due to the circumstance that those tendrils which avoid the light incline to the opaque bodies which are near them, because it is on that side that the least light reaches them. My experiments upon the germination of the seed of the mistletoe, published in 1824, furnished a new and completely demonstrative proof of the existence of the tendency of certain vegetable stalks to fly from the light. The little stalk of the seminal embryo of the mistletoe, the stalk which the rudimentary radicle terminates inferiorly, flies from the light; and mark why it directs itself towards the opaque bodies on which the seed is pasted.

A very celebrated botanist has explained the tendency of stalks to bend towards the light, by admitting, in the side of the stalk which is kept from the direct influence of the light, a greater elongation than in the side which is directly illuminated. This explanation is founded on the known fact, that the diminution of light favours the elongation of stalks (*etiolement*).^{*} It appears, then, quite natural to admit, that the side of a stalk which is away from the light will be a little *etiolé*; and will assume, consequently, a greater elongation than that which will be assumed by the illuminated side of the stalk, the side which will be more promptly solidified. The result of this excess of elongation of the side which is situated away from the light, will be, that the entire stalk will be curved towards the light. Thus, according to this theory, it will be the side of the stalk that is opposite to the light, which will alone act in bending the stalk. This theory, as simple as it is ingenious, has obtained the assent of every one, and yet it cannot stand before an experiment which is perfectly simple.

^{*} *Etiolement*; an alteration which occurs in plants; a disease which causes them to shoot forth long, slender stalks, of a white colour, and terminated by puny leaves, ill formed, and of a pale green. Such are grasses which we often find under stones. The blanching of lettuce, endive, and celery, is nothing but an artificial *etiolement*, by which we give to those plants a softer taste.—*Laveaux's Dictionary*.—ED. L.

I took a young stalk of lucerne, which was greatly bent towards the light, and I cleft it in two, so as to separate that one of its sides which was directed towards the light, or the illuminated side, from the opposite side, which was directed away from the light, or the obscure side. At the moment of this division, the illuminated side curved itself much more profoundly, and the obscure side became straight again. The latter was then curved, in spite of itself, towards the light,—the sole agent of the flexion of the stalk under these circumstances. Now, by the theory set forth above, the illumined side should be curved passively.

I proved a long time since that all the inflexions which the stalks of vegetables assume depend on an equality occurring in the tendencies to incurvation which exist in the concentric portions of those stalks. In the natural state, those tendencies to incurvation, concentrically opposed, counterpoise each other, so that the stalk of the vegetable preserves its upright condition; but if an external cause, acting specially on one side of the stalk of the vegetable, diminishes the force of incurvation on that side, the result will be that the opposite side, whose force of incurvation may not be varied, will become the stronger, and draw the antagonizing side, which is thus overpowered, in the direction of incurvation which is proper to it. From this principle flows the tendency of stalks to direct themselves towards the light, and their less common tendency to fly from it, as I proceed to show.

All climbing plants apply themselves against their supports; because they avoid the light which flows from the side opposite to that of the support; it is towards the latter that the stalks tend to flex themselves, as the following experiment proves:—I detached from the trunk of a tree the summit of a stalk of ivy; and I maintained it, removed from the tree, by the interposition of a little bit of wood. Six hours afterwards this ivy-stalk had flexed itself towards the tree, and re-applied its top to the latter. Thus, in place of bending itself towards the light, this climbing stalk had bent itself in the opposite direction. I cleft, longitudinally, in two, this young and yet herbaceous stalk of ivy, so as to separate its illumined side from its obscure side, which was applied on the trunk of the tree. The obscure side was curved more profoundly; the illumined side grew straight again, and tended slightly to curve itself in the opposite direction. Thus, the flexion of the stalks, considered in its entire, was effected by the obscure side alone; the illumined side was passive in this flexion. This is, as we plainly see, the inverse of that which takes place in stalks which flex themselves towards the light. In seeing stalks bend thus, some towards the light, and others in the opposite direction, one must conceive that those stalks whose flexion was inverse under the influence of

the light, must possess, in certain points, an inverse structure. This, observation has also demonstrated; for in all stalks just shot forth, and still herbaceous, the bark is entirely composed of a cellular tissue, the cells of which present two arrangements of decrement. The external layer of this cellular tissue presents cells which decrease in size from within outwards; the interior layer of the same cellular tissue presents cells which decrease in size from without inwards. Thus it is in one of the median divisions of the thickness of the bark, that the larger cells are found; and I have observed, generally, in stalks which bend towards the light, that it is the internal layer of this cortical cellular tissue which is the thicker, so that it is that layer which determines the general mode of incurvation which results when we detach a longitudinal slip, and plunge it into water. This slip then curves itself inwards; its epidermis occupies the convexity of the curvature. This is the natural result of the turgescence, by endosmose, of the cells, decreasing in size from without inwards, which predominates in this bark.

I have observed an inverse mechanism in stalks which bend in a direction inverse to the afflux of light; in them it is the external layer of the cortical cellular tissue which is the thicker, and as, from the mode of decrement of its cells, from within outwards, it tends to curve itself outwards, it is that which determines the general mode of incurvation which affects a longitudinal slip of this bark when it is plunged into water. Its epidermis is then found situated on the concavity of the curvature.

It results from these observations, that in stalks which bend towards the light, the bark tends to curve itself inwards, and that in stalks which bend in a direction inverse to the afflux of light, the bark tends to curve itself outwards. This curvature is in both cases the effect of cellular turgescence. So long as the bark possesses, in its whole periphery, an equal force of incurvation, the stalks remain upright, since all the antagonizing forces of incurvation are balanced; but if there occur an enfeebling of this force of incurvation of the bark, on one side of the stalk, the latter is then bent by the action of incurvation of the bark of the opposite side, which has experienced no enfeebling.

Now, we know that light augments the transpiration of vegetables; it diminishes, consequently, the turgescence of those cells of the bark on which it falls; it occasions, then, by this very circumstance, the diminution in the force of incurvation of the bark. Now, if this latter tend to curve itself inwards, or towards the centre of the stalk, the force of incurvation being enfeebled by the light on the illumined side of the stalk having preserved all its force of incurvation, the equilibrium is broken. The central system, which always tends to bend outwards, no longer finding on the illumined side of the

stalk opposition to its incurvation, equal in degree that which existed before, in consequence of the antagonizing influence of the bark, the central system acts more freely on that side, and bends the entire stalk towards the light. It is then aided by the bark of the opposite side,—the side whose central system is forcibly bent in the opposite direction to that of its natural tendency to incurvation. Thus this obscure side returns spontaneously to its natural incurvation, when it is separated from the illumined side, which, then, freed from its antagonist, curves itself more completely outwards.*

It is by an inverse mechanism that the stalks of climbing plants bend in the direction which is opposite to that of the afflux of light. In those stalks the bark tends to curve itself outwards. Now, the light, enfeebling this tendency in the side on which it falls, the central system of that side,—the central system whose tendency to incurvation is equally outwards,—is deprived of an auxiliary. From this time the central system of the opposite side of the stalk, or of the obscure side,—the central system which has retained in the bark which covers it, an auxiliary whose force has not varied,—bends the entire stalk in the direction which is opposite to that of the afflux of light. The central system, and the cortical system of the illumined side of the stalk, are then forcibly curved in the direction which is opposite to their natural tendency to incurvation. In some instances, indeed, we see stalks of climbing plants direct themselves towards the light, though it is generally their nature to avoid it. So, for example, ivy attached to a wall applies a great number of stalks upon that support, and projects others forwards; those latter as evidently direct themselves towards the light as those stalks which are applied on the wall avoid it. The reason is this; the intense light, by augmenting vegetable respiration, strengthens the incurvation of the central fibrous tissue of the stalk, an incurvation which tends to operate outwards, and conse-

* In consequence of the disengagement of oxygen, which always proceeds more rapidly under the influence of light, the tendency of the fibrous tissue is to curve outwards, and most so on that side from which the light proceeds; but in the young stalks of which M. Dutrochet speaks, it exists in such small proportion, that its influence may be fairly overlooked. The influence of the central cellular tissue, as the cells always diminish in size from within outwards, always tends to curve the plant outwards by endosmose. M. Dutrochet supports these theories by microscopic observation, and has mentioned many interesting facts respecting the mistletoe, the vine, the weeping ash, the juniper communis, and explained the erect position of the flowers of the convolvuli purpureus and arvensis, when full blown, and their drooping condition before and after, by the greater extent thus afforded for transpiration, restoring the equilibrium between the opposite sides. The erect position of the convolvulus sepium he accounts for from the circumstance that its two large bractæ afford means for similar transpiration.—Ed. L.

quently towards the light, which strengthens it. I have observed that the stalks of ivy, to avoid the light, require in their vegetating extremity a slight degree of *étiolement*, a state from which results the feebleness of vegetable respiration. From this influence of vegetable respiration on the inflexion of stalks under the influence of the light, it results that vegetable stems which are no longer green, and which, consequently, do not produce respiratory oxygen, neither tend to direct themselves towards the light nor to avoid it. Such are roots in general, so long as they remain white; but when, accidentally, they become green, they evince the tendency to direct themselves towards the light, or the tendency to avoid it, and that according to the structure of their bark, as I have explained respecting stalks.

According to this statement, every thing is purely *mechanical* in the inflexions which the stalks of vegetables assume under the influence of light; there is nothing "instinctive," as some possibly have supposed. I do not venture to decide affirmatively if it be the same with regard to the *oscillaires* †, in which the tendency towards the light is very manifest.

The *oscillaires* are certainly vegetables, for they disengage oxygen in the light, which is perhaps the most distinguishing character of vegetable nature; at least, in relation to green vegetables, and the *oscillaires* have this colour. Notwithstanding their *spontaneous* movements, then, the filaments of the *oscillaires* are those of animals. Those filaments, however, transport themselves, spontaneously towards the light as animals would do. I have convinced myself of this fact by the following experiment: I put a small portion of the *oscillaria smaragdina* (Bory) in the bottom of a salver, filled with water, and I covered it with a small plate of lead, bent into an elliptic arch. The filaments of the *oscillaire* fled from beneath this little arch, which intercepted the light, and not one of them remained below it. All proceeded, by a spontaneous and independent movement, to place themselves outside of, and at a short distance from, the little arch of lead, and assembled themselves there, forming a green membrane on the bottom of the salver. But a short time was required for the production of this phenomenon, which, besides, only took place when the temperature was $\approx 15^{\circ}$ centesimau.x. M. Bory, de St. Vincent, informs me, that he has also observed the transport, towards the light, of the

oscillaires, which he regards as beings that are intermediate between the animal and vegetable kingdoms.

ON RIVERS, RIVULETS, AND CASCADES IN LANDSCAPE GARDENING.

If a large river may sometimes, a smaller current undoubtedly may often, be conducted through a wood, it seldom adorns, it frequently disfigures a prospect where its course is marked, not by any appearance of water but by a confused line of clotted glass, which disagrees with the general verdure; a rivulet may, indeed, have consideration enough for a home scene, though it be open; but a rill is always most agreeable when most retired from public view; its characteristic excellencies are vivacity and variety, which require attention, leisure, and silence, that the eye may pore upon the little beauties, and the ear listen to the low murmurs of the stream without interruption. To such indulgence a confined spot only is favourable: a close copse is, therefore, often more acceptable than a high wood; and a sequestered valley at all times preferable to any open exposure: a single rill at a very little distance is a mere water course—it loses all its charms—it has no importance in itself, and bears no proportion to the scene. A number of little streams have, indeed, an effect in any situation, but not as objects; they are interesting only on account of the character they express; the irriguous appearance which they give to the whole.

The full tide of a large river has more force than activity, and seems too unwieldy to allow of very quick transitions; but in a rill, the agility of its motion accounts for every caprice; frequent windings disguise its insignificance—short turnings show its vivacity—sudden changes in the breadth are a species of its variety—and however fantastically the channel may be wreathed, contracted, and widened, it still appears to be natural. We find an amusement in tracing the little stream through all the intricacies of its course, and in seeing it force a passage through a narrow strait, expatiate on every opportunity, struggle with obstructions, and puzzle out its way. A rivulet, which is the mean betwixt a river and a rill, partakes of the character of both: it is not licensed to the extravagance of the one, nor under the same restraints as the other; it may have more frequent bends than the river, longer reaches than a rill: the breadth of a stream determines whether the principal beauty results from extent or from variety.

The murmurs of a rill are amongst the most pleasing circumstances which attend it: if the bed of the stream be rough, mere declivity will occasion a constant rippling noise; when the current drops down a descent, though but a few inches, or forcibly bubbles up from a little hollow, it has a deep gurgling tone, not uniformly

* The *oscillaires* are a genus of Cryptogamous plants of the family of the *Conferæ* which present simple, cylindrical, jointed filaments, united at their base, and floating on water, or fixed on bodies which may be found therein; the species which belong to this genus have been confounded by botanists with the *conferæ* and *tremelles*, but they differ from those in being always simple, and possessing an oscillatory movement, which appears to ally them to animals. Twelve species.—ED. L.

continued, but incessantly repeated, and therefore more engaging than any; the flattest of all is that found rather of the splashing than the fall of water, which an even gentle slope, or a tame obstruction, will produce; this is the less pleasing than the others, but none should be entirely excluded, all in their turns are agreeable, and the choice of them is much in our power, by observing their causes, we may often find the means to strengthen, to weaken, or to change them; and the addition or removal of a single stone, or a few pebbles, will sometimes be sufficient for the purpose.

OF CASCADES.

A rill cannot pretend to any sound beyond that of a little water-fall; the roar of a cascade belongs only to larger streams, but it may be produced by a rivulet to a considerable degree, and attempts to do more have generally been unsuccessful: a vain ambition to imitate nature in her greatest extravagancies betrays the weakness of art: though a noble river, throwing itself headlong into a precipice be an object truly magnificent, it must, however, be confessed, that in a single sheet of water there is a formality which its vastness alone can cure; but the height, not the breadth, is the wonder; when it falls no more than a few feet, the regularity prevails, and its extent only serves to expose the vanity of affecting the style of a cataract in an artificial cascade; it is less exceptionable if divided into several parts, for then each separate part may be wide enough for its depth, and in the whole, variety, not greatness, will be the predominant character: but a structure of rough, large, detached stones, cannot easily be contrived of strength sufficient to support a great weight of water; it is sometimes from necessity almost smooth and uniform, and then it loses much of its effect; several little falls in succession are preferable to one great cascade which in figure or in motion approaches to regularity.

When greatness is thus reduced to number, and length becomes of more importance than breadth, a rivulet vies with a river; and it more frequently runs in a continued declivity, which is very favourable to such a succession of falls. Half the expense and labour which are sometimes bestowed on a river to give it, at the best, a forced precipitancy in one spot only, would animate a rivulet through the whole of its course; and after all the most interesting circumstance in the falling waters is their animation; a great cascade fills us with surprise; but all surprise must cease; and the motion, the agitation, the rage, the froth, and the variety of the water, are finally the objects which engage the attention; for these a rivulet is sufficient; and they may there be produced without that appearance of effort which raises a suspicion of art.

To obviate such a suspicion, it may be sometimes expedient to begin the descent out of

sight; for the beginning is the difficulty; if that be concealed, the subsequent falls seem but a consequence of the agitation which characterises the water at its first appearance; and the imagination is at the same time let loose to give ideal extent to the cascades; when a stream issues from a wood, such management will have a great effect; the bends of its course in an open exposure may afford frequent opportunities for it; and sometimes a low broad bridge may furnish the occasion; a little fall hid under the arch will create a disorder, in consequence of which, a greater cascade below will appear very natural.

THEORY OF FORCING THE VINE.

BY MR. TOWERS.

A vine can be habituated to almost any course of treatment. When first introduced to a forcing house, if it be initiated to early excitement, and during two or three successive seasons be regularly so treated, its buds will begin to swell at a corresponding period of each year with astonishing precision. Thus, supposing a young tree is planted in October, and the first fire lighted on the new year's day following, a temperature of 60 or 62 degrees, by fire maintained by night and day, the buds will be tardy, because, in nine cases out of ten, the tree has been raised in the open air by a layered shoot; and as few exposed vines begin to grow before April, the excitement of 16—20 extra degrees of heat will not produce an immediate apparent effect. But let the same energies be exerted during the following season, and again in the third, it will be seen that the tree has acquired a new and extremely sensitive temperament, inasmuch that the buds will enlarge in a far shorter period of time, with a heat of 55 degrees, than they did in the first year at 62 degrees.

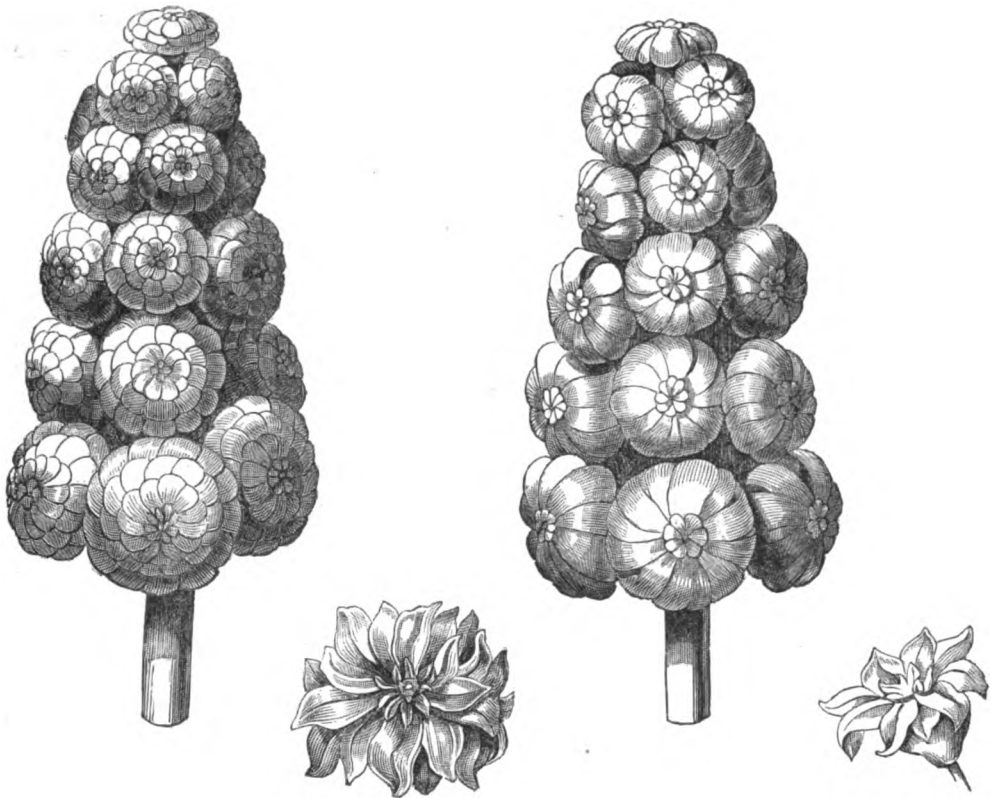
It is no uncommon circumstance in gardens where there are two or three vineries to excite the Vines alternately, with a view "to rest" the trees: thus, Vinery A, for the early crop, is brought into action December 1, 1840, after having been treated in a similar manner during the two previous seasons. But Vinery B, destined to produce the later crop, is and has been left at repose till mid February.

In 1841, however, the gardener adopts a system of alternation, and commences with B, leaving A cold till the later of the two periods. B, however, deceives him; for no degree of fire-heat that he can with discretion apply will stimulate the Vines of that house to early activity; neither can those of A be so retarded as to ripen the fruit at the expected period; for the constitutional habits of the trees have been disturbed, and proportionally deranged.

The true theory of forcing, which implies regularity of fruiting, and the perfect safety of the trees, is comprised in the following axioms:

First.—Excite the same trees, and at precisely the same time of year; avoiding, if possible, to give one degree of artificial heat beyond 35 degrees (*i. e.*, just to keep above actual frost), till the sun has passed its lowest meridional depression. Second.—Clean the stems of the Vines thoroughly, and keep them moist

during the early stages of forcing, by occasionally syringing, and a moderately vaporous atmosphere. Third.—Never attempt a higher degree of night temperature than 65 degrees, and come to that gradation—first week, 55 degrees, second, 60 degrees, and 62—65 degrees.



PROPERTIES OF THE HYACINTH.

SOME of these are already appreciated a little, but none sufficiently distinct. There are a few of the present varieties which have long spikes of flowers, and those very compact—both of which are desirable—but they for the most part have very ill-shaped pips. There are others which have very prettily formed pips, of a great size, but they are far apart on the spike, and some hang awkwardly; and those who exhibit the flower, know but little as to what caprice is to decide their fate; but as the time when the flower can be seen forced, has arrived, and the period for showing in pots is approaching, we take the opportunity of defining a little the properties which should be esteemed; as nearly all the points have been attained in different flowers, there is every reason to hope,

that as soon as we persevere in raising seedlings in this country, and force the Dutch to follow the example, we shall make rapid advances toward obtaining several properties in the same flower. We commence with the pip.

Each pip or flower should be round and not ragged. The petals should be broad, thick, blunt at the ends, not pointed, and reflex enough to throw up the centre well. The foot stalk should be strong, and hold the flower out stiff in a vertical position, that is, facing the spectator, and by no means weak to allow the pip to hang with the face sloping toward the ground. The foot stalks should also be of a length, to make the pips touch each other and no more. The pips should be large, for unless the pips be large they cannot touch each other

without very short foot stalks, and the flowers would be so close to the stem, that the truss itself would be no size. Double flowers should have the rows of petals above each other very regularly imbricated so as to throw up the centre. The outer petals, therefore, of a double flower need not reflex, and should not reflex so much as a single one, because the centre is raised by the second and third rows of petals.

The spike should be bold, round, compact, and pyramidal, with a number of flowers at the bottom, gradually diminishing to a single flower at the top. The flower stem should be very strong and upright, and, no part of it should be seen from the lowest flowers to the top, in consequence of the closeness of the pips to each other.

The colours should be bright, clear, and dense, whatever the shade; and any better approach to scarlet, blue, or yellow, than those shades we now possess, would be highly esteemed; flowers with dark eyes, very clear outsides, and those with striped petals, would be held to be better than selfs in general, but would give no point against form.

GARDEN REMEMBRANCER FOR APRIL.

KITCHEN GARDEN.

Sow Peas, Beans (long pod), Cabbages, Savoy, Red Cabbage, Beetroot, Lettuce, Small sallad, Spinnach, Onions, (Spanish for main crop and Silver for drawing young), Leeks, Celery (in the open ground), Broccoli, Cauliflower, Nasturtium, Parsley, Turnips, Radishes, Kidney Beans, and Scarlet Turners.

Transplant Lettuces, and all other crops that are large enough; also Sea Kale from the seed bed to where it is to grow finally.

Hoe and earth up Peas, Beans, and other crops requiring it, clearing out the weeds at the same time, and thinning those crops which require it, such as Spinach and others.

FLOWER GARDEN.

Sow biennials, perennials, and hardy annuals.

Give air to the greenhouse all mild days.

Pot Carnations and Piccotees.

Examine Roses, and destroy the green fly, or any other noxious vermin.

Pot Tuberoses in light rich soil.

Give air to all seedling plants sown in February or March.

Pot any annuals intended to be grown in pots, and transplant any of the hardy ones that are large enough, to the place they are to bloom.

Sweep and roll the walks; cut the grass on the lawn.

Destroy worms, slugs, &c.

Cover your blooming Auriculas with a hand glass, propped up on the bottoms of four other pots inverted.

Look over all your stock of struck cuttings

intended for planting out in clumps, and if there be any short of the number you want, strike others under glass and upon bottom heat.

Thin Apricots as soon as they are large enough to handle, which may be the end of the month. Take off all useless branches and the shoots that grow outwards.

Peach and Nectarine trees must be served much the same way.

Strawberry beds keep clear of weeds, and you may cut a few down, as if they were mowed: they will bloom after all the others and produce late fruit.

REMARKS ON THE

DESCRIPTIVE CATALOGUE OF TULIPS.

PUBLISHED BY MR. HARRISON.

SIR—Before I proceed to notice the Catalogue to which Mr. Harrison has most indiscreetly given currency, I beg to call on Mr. Harrison for a disclaimer of a gross falsehood put forth by the writer in an abusive article, directed against me personally. The Horticultural Society cannot discard a Fellow unless he has committed some felony, or done some highly disgraceful act, yet Mr. Harrison permits his correspondent to designate me “a discarded F.H.S.” I treat his insinuations and his abuse with the contempt they deserve; but not so the falsehood. The inference drawn by Mr. Harrison’s readers would be, that there was a foundation for so shameful an imputation, however base the libeller might be, or Mr. Harrison would not have permitted it to appear, and I call on Mr. Harrison to remove that impression.

I now proceed to the Catalogue, and I do it with the conviction still upon me, that as I have prevented it from deceiving any body, this further notice is unnecessary. You think otherwise.

I have said it would have been useful had it been correct. I shall go very little into it to show that nothing but gross ignorance or deep design, can account for its appearance at all.

Many of the names it contains are those of flowers long since thrown away, and which may be bought in the most common mixtures sent from Holland. Some are those of flowers which it would be a gross imposition to sell. The names of a great number of fine varieties are omitted altogether, and some are those of flowers of which we have never heard, and, if the descriptions be true, we never ought to have heard.

The blundering throughout, exemplified in misdescriptions of known flowers, induces me to conclude, that if the writer was not designedly misleading the public, he is perfectly unacquainted with the flowers he describes; that he is growing many under wrong names, and that if he is cultivating all the rubbish he mentions, the sooner he routs them up, and clears

them off, the better, for they have been thrown out of even common beds for many years.

I certainly shall not condescend to honour the writer's observations on properties with any notice. I have said what they ought to be, and the propriety of my decisions has been admitted almost universally. Mr. Groom's lecture about semi-oblate spheroids, which puzzled not only his hearers, but also himself, went for nothing; and the floral world very properly adhere to the requisites unanimously approved by the Metropolitan Society.

Nor is it at all desirable that I should waste the space of the "GARDENER" by detailing the long list of worthless flowers which it may suit a dealer to keep before the public, but which ought not to be grown by men of taste; what I really propose to do is, to take a few of the descriptions which are erroneous, to give an idea of the dependence which may be placed on the writer's opinions. I begin with

ALBION, called also LORD FORTESQUE, which the writer says "is a fourth-row Bizarre, and was first broken from the breeder at Manchester in 1820, from a breeder supposed to have been procured from Holland. *The cup is a fine form, the petals thick, glossy, and a rich yellow, beautifully feathered and flamed with a dark brown, almost black. This variety is a first-rate stage flower, although for some years it has not bloomed equal to what it did formerly, and the only instance I know of a Tulip not doing so.*"

Now what will your readers think when I tell them, not only that this flower is Polyphemus, the much abused Polyphemus, which the very same writer describes as "a flower cried up in the south as one of the finest Bizarres cultivated;" but a flower with stained filaments, "which would condemn any pair, when staged for a competition." The first impression of a reader would be, that I must be mistaken in the flower; but I do happen to know that it is nothing but Polyphemus, and I happen also to know that a Southern Florist, anxious to possess one of the Albions, so highly prized, *had one of the writer himself*, and found it when it bloomed a Polyphemus!!! The supposed origin, too, is altogether wrong. The description of ALBION is correct; the description of Polyphemus (which I repeat is the same flower) is incorrect. In charity I will hope that the writer, who evidently knows but little of the matter, has been imposed on by some spurious variety for Polyphemus; and I trust he will henceforward throw away his flowers, with the stained filaments, and call his Albion *alias* Polyphemus. I know I am not mistaken in his Albion, because he supplied a root himself. The writer says, "it has not for some years bloomed so well;" and it is "the only instance he knows of a Tulip not doing so." I can only say, he is a fortunate man if he have not experienced the changing of flowers for the

worse, or else he must have begun with them in a very bad state.

BRULANTE ECCLATANTE, he says, "is a second row feathered and flamed Rose—the colours brilliant, *the form good*, and the bottom pure."

We, in the south, like the flower in its best state as a bed flower; but as we do not like its pointed petals, I dispute the fact of its being a good form. It is quite true that other flowers are sent out under the name, but I speak of the true one.

"BACCHUS," he says, "is a second row feathered and flamed Byblomen, classed in the catalogue as a Rose."

Now Bacchus happens to be a fourth row coarse Bizarre; and if he meant to describe *Rose Bacchu*, miscalled in some of the catalogues *Rose Bacchus*, that happens to be a third or fourth row Rose, and justly called so, because while fresh and alive it is nothing but a Rose; and the fact of its dying a Byblomen colour no more makes it a Byblomen than the same characteristic makes *Rosa Blanca* one.

ROSA BLANCA is said by this writer to be "a very early Tulip, a second row flower, thin petalled, and cup not first-rate."

Now, in the first place, it is a very finely formed Tulip, there is not one in fifty nearly so good; and, in the next place, it is a fourth row flower, and a very small bulb is quite a third row. The flower goes off to a Byblomen colour, much more perfect and purple than *Rose Bacchu*, or *Rose Bacchus*, as it has been called.

CAMUSE DE CRAIX is said "to possess every requisite for a first stage flower."

It is anything but a good stage flower; and the true Camuse, which is not half its price, is in all points worth a score of it.

CAMUSE (Rose) is called "a first row variety, rather early, and is also feathered and flamed."

It is not a first row flower, and would spoil any first row it was planted in. It is a tall second row, and oftener planted in the third row than any other; and is designated a third row flower in the catalogues.

CARLO DOLCI is said to be "a fourth row tri-coloured Bizarre, the form good, the bottom also good."

It is not a fourth row flower, nor properly a third row one. It is not a good form, for it turns in at the edges of the petals, and what the florists call "hugs" instead of opening freely.

CERES ROYAL (called also PONCEAU BRILLIANT and MORES ROSE), is said to have "the bottom stained."

It is, however, identical with Mantua Ducal, a very clean Rose, going under both names, and as clean as any Rose grown.

MADAM CATALANI is said to be "a fine flamed Rose, a first row flower."

It is a second row flower, but I will not be hard upon him for this, because Groom has in his Catalogue marked it first row, and most

likely the flower he sends out for it is only first row.

CHARBONIER is said "to possess all the properties of a first-rate Tulip, and the inside to be purer than Polyphemus."

This is impossible, vide Albion, as described by this writer.

COMPTE DE VERGINNES is said to be "highly esteemed as a stage and bed flower."

In the same page it is admitted that the "form is not good; the three outer petals, forming a triangle;" in fact, it is not a fit flower to exhibit.

DUCHESS OF CLARENCE is described as "a tolerably good second row Rose, raised by the late Mr. Lawrance at Hampton."

It is a very grand rose, with a straw-coloured ground while young, but bleaching as it ages.

ROSE EMILY is said not "to rank either in the class of Roses or Byblomens."

It is a very beautiful Rose, with all the characteristics of a Rose, but like Blanca and Baccu, dies more of a Byblomen colour.

GENERAL BARNAVELD is called one of the finest flamed Byblomens cultivated.

It is a bad tricolour; and to convince myself I was right, I enquired of Mr. Jeffrey, who had it, and he confirms me. It is said to be in but few hands,—no matter if it were in a still less number.

GLORIA ALBORUM is described thus:—"This is a third row flamed Byblomen. The cup rather long, the petals pointed, and the bottom very creamy."

It is a first, or, at most, a second row flower, very beautiful, and the petals are not pointed.

GALLATEA.—"This," says the writer, "is a second row feathered Rose, broken this year from the breeder by myself. The cup good, the bottom pure, and the feathering almost a scarlet. The breeder of this flower has been grown many years as a Byblomen, although it breaks into such a fine coloured Rose. The whole consists of one root of the breeder, and one of the broken flower."

ROSE GALATEA is a very fine flower of its kind, but it is plentiful every where, and not dear. The writer's stock may be only what he says, but the public would, if not undeceived, consider him to mean that the flower is scarce. If he has named one himself, the description rather oddly coincides with those of a very plentiful flower.

LAC is said to be of a "good form, and to have thick fleshy petals."

On the contrary, with all its acknowledged beauty it is a bad form, and has thin flimsy petals.

MASON'S MATILDA is said to be a second row Byblomen, and resembles Triumph Royal.

Now, Mason's Matilda is a Rose, and so is Triumph Royal.

"REINE DE MAURITANA," says the writer, "is a second row flamed Rose, very like Triumph Royal."

It is in no respect similar but that it is a Rose.

REINE DE SHEBA BYBLOMEN is said to be "an early variety, and tender."

It is so late a flower, that it is rarely early enough to show. It is about the same season as Siam.

SABLE REX is said to be "a fine stage and bed flower."

To refute this, it is only necessary to state, that in another paragraph it is admitted that the bottom is stained.

SHAKSPERE, alias GARRICK, is called "a first-rate stage flower."

It is not half so good in properties as Polyphemus, Charbonier, Surpasse Catafalque, Strong's King, Marcellus, and many others. It is a good bed flower when fine, but the most treacherous and uncertain flower in cultivation.

STRONG'S KING is said to have "been raised or broken from the breeder by Mr. Strong, of Hammersmith," whereas, it was broken by Mr. Davies, of the City Gardens, who sold Mr. Strong the stock. The writer says "its form is not first-rate," whereas, it is universally admitted by excellent judges, to run Polyphemus harder than any other flower. He says, "there is a slight tinge at the base." There is not a cleaner flower. He objects to the colour, which he calls "reddish," and affirms that "the darker the colour is the better," and that "the least valued is a reddish one." We deny that a scarlet feather is worse than a black. He says it is disgusting to read that "Strong's King and Polyphemus are the two best Bizarres cultivated." We have already shown that he affirms Albion (which is Polyphemus, and nothing else) to be all we ever said of it. He is as much deceived in his Strong's King as he was with Polyphemus.

TRIUMPH ROYAL is said to be "a second row flamed Rose; cup rather long, bottom pure, petals rather pointed."

The petals are not pointed—it is one of our very best Roses.

VIOLET BELLE FORM is said to have "thin petals," and to be "a sporting variety."

The petals are not thin, and the flower is much more steady than most Tulips.

VOLTAIRE is described as "a third row feathered bizarre; cup good, bottom pure, and the feathering a dark brown; a good stage variety."

It is a bad form, with pointed petals, and has long been discarded from good beds.

WALWORTH is called "a fourth row feathered Rose, with a long cup."

The true Walworth has not a long cup, and perhaps the writer has got something else for it. It occasionally comes very fine indeed, and is honoured with a new name.

Many worthless, dirty-bottomed, discarded flowers, are described in glowing colours. Many are avowedly flowers of the writer's own breaking.

ing, and are praised without bounds. Some have never been heard of by the oldest florists in the metropolis, and the whole furnishes a very first-rate example of the fallacy of trusting to a dealer's description. The writer's information on the subject of Tulips is at any rate exceedingly limited, and it is worthy of remark, that the very person of whom he had some of the little information he possesses, an old and respected grower, of very many years standing, is more severe in his remarks than I have been. I repeat, that the mere abuse contained in his concluding paper is beneath notice, and that I simply complain of a false assertion which Mr. Harrison has perhaps inadvertently admitted, and which I shall simply require him to disclaim. I am very little concerned about the impression which the writer's judgment, or assumed judgment, will make when opposed to my own, and I am utterly careless of the consequences of his wrath; but I must teach him, through Mr. Harrison, that he must be more careful how he vents his spleen in false and malignant slander. If he has the slightest doubt about my descriptions, he may satisfy himself by a line to one of the most experienced growers near London, of whom he has had many Tulips, even the last season, and who will tell him at once that he has been egregiously mistaken.

G. GLENNY, F.H.S.

THE ROYAL BOTANICAL SOCIETY'S EXHIBITIONS.

THE intention of the Royal Botanical Society to hold shows, in their Gardens in the Regent's Park, has excited a sort of emulation among some of the growers who had almost despaired of showing fairly again. The Society possesses advantages which no other enjoys. The proximity to the fashionable part of the town, and the beautiful effect produced by the gardens when they are entered, scarcely a minute after we have emerged from a forest of houses, gives a charm very different from that which belongs to gardens further removed. The facilities for showing with effect are also great; and there seems to be no good reason why the Regent's Park shows should not take the lead. We shall hereafter examine the details of the programme which they have issued; but there is one exceedingly good point which, whatever the rest may be, is a praiseworthy adoption. It is a rule that "No Judge shall be appointed from among the Fellows or Members of the Society." There is another, which we had as soon dispensed with—but a sword in some people's hands would be safe, whilst in those of others it has been used only for oppression.

We wish the Society well; we should like to see it fairly rival another Society, which has, from its being too long controlled by the same voice, become much less worthy of support; and

we are quite sure that the three exhibitions in the Park, like certain exhibitions at Chelsea, will make the good people at Chiswick look about them and keep their house in order.

WEEKLY JOURNAL OF GARDENING.

IF you have a warm border, plant a few whole potatoes of the Ash Leaf Kidney kind, in rows, across the border, not along it; let the rows be three feet apart, and you may put a crop of some kind between them. The best way to plant them, if the ground has been manured in autumn, and is pretty light, is to make a trench with the spade, four inches deep, and lay them at the bottom, six inches apart, covering them up lightly, not quite level with the surface, but so as to leave them full three inches covered. If the ground has not been manured in the autumn, make the trench as wide as a spade, and flat at the bottom, planting the potatoes in the centre, and cover with littery dung, three inches thick, and then throw back part of the mould to form a bank, or rise, two inches higher than the original border, but the dung will very soon settle down.

TULIPS.—With a small wooden spud, an inch wide, dig carefully between the rows, and break the entire surface of all the beds, taking care not to go deeper than from an inch to an inch and a half, and break all the lumps which the surface forms when disturbed, and especially guarding against bruising the leaves, or allowing the mould to fall into the heart of the plant. If there be any canker or damage in the foliage of a flower, cut it carefully out with a sharp pen-knife, even if you have to go down to the bulb.

AURICULAS.—See that the pots in top-dressing are pretty full of mould, and that the bottom leaves are not buried; they are now rising for bloom, the slightest check with cold winds or frost will set the bloom, while to keep them too close will draw the truss up weak, give air therefore whenever the weather is fine; and in watering after the bloom is forward, the foliage must not be wetted; above all things see that the drainage is free.

DAHLIAS.—Persons who are already forward with plants must give those which have struck root good pot room, and plenty of air in mild weather. It is a point very little attended to, but if once a young dahlia becomes stunted and pot-bound, it is difficult to bring the plant into healthy free growth, and this has disappointed many who looked to late planted Dahlias for a continuation of blooms, forgetting that the last month before they were planted they had no room to grow, and they may often observe after this, that for weeks after planting, they scarcely move.

HYACINTHS, and other early bulbs in beds, should be carefully protected, as tulips are, by hoops and net work over the bed to keep off vermin, and mats at night to keep away frost.

If hail-storms come on it is of the most important consequence to keep off even stone, for a whole bloom of hyacinths would be destroyed in ten minutes by only bruising the buds, and a bed of tulips ruined by only slightly bruising the foliage.

FRUIT ON WALLS.—Continue to hang net (which can be purchased cheap at the seed shops) or old bunting over all fruit trees in bloom during frosty windy days, and always at night, it will, however, do much good to remove them in mild sunny weather, if it be only a few hours. It is good to burn your weeds or old mats, or other rubbish, to windward of any wall or trees at all infested with vermin, the smoke will kill almost every thing.

HEARTSEASE.—Stir the mould between these as carefully as you would tulip beds; and if you propose showing, water only seldom between the rows, and, as the flowers advance, with manure water. If there are any sorts you desire to propagate without hurting the old root, take off carefully any outside shoots which originate below the surface—they will strike almost immediately under a hand-glass, in or out of a pot.

ORANGE AND LEMON TREES may be pruned into shape, or, if they have grown very ugly and bare, head them down; shift such as require it into larger pots without disturbing the ball of earth. If any are headed down altogether to make first growth let them have six weeks in the stove.

CAMELLIAS require plenty of water, and to be kept at an even temperature; sudden changes will make them throw their buds.

SEEDS OF GREENHOUSE PLANTS may be now sown, if not done when they first ripened, which we in all cases recommend, if there be the means of protecting them through winter.

CLIMBING PLANTS of all descriptions should be very carefully trained to their trellises as fast as they grow, otherwise their leaves and stems will be twisted and distorted, for the foliage will have one face to the light, and if long pieces have to be trained, it will be found that half the leaves will be turned the wrong way, and are sometimes a good while getting right, if they ever completely do so.

ALL PLANTS IN POTS should be top dressed a little wherever the soil has become sour or mossy; take a little of the soil away, without damaging the fibres of the roots (which frequently come near the top), and add fresh mould according to the kind of plant.

CARNATIONS may now be potted, if you have the means of protecting the larger pots from excessive rain and frost. The soil in which these are bloomed cannot be too rich, but the dung in it must be so thoroughly decomposed as to become mould, half good rich loam, and half decomposed leaves or cow dung, with sand sufficient to counteract any stiffness, and allow water to go through it, will be found extremely good.

The pots should be twelve to the cast. If you have not room to protect them in large pots, better delay a week or two.

PINK beds may be top dressed with good decomposed dung, the earth being first stirred between them.

CALCEOLARIAS, established plants of the shrubby kind now begin to grow; if they be not tied to small sticks as they advance, training them will be a very troublesome job; there should be a very light stick to each main shoot. The herbaceous kinds, as they advance, require the same assistance, but have not a quarter so many shoots.

ROSES.—Prune them now close, the garden kinds especially; select the strongest wood, a year old, and cut down to the last bud, or the last two, and wherever you can spare it cut the old wood clean out. The China sorts you may either cut into any form you wish; or, if you want show flowers, those should be cut very close also. Garden Roses may be propagated by grafting, and especially as the cuttings would otherwise be wasted; but the China and Noisette kinds strike so freely, that they may be placed under a hand-glass in the open garden, under a north or east wall, so they be but covered from frost; but a little bottom heat assists the operation of striking.

Air must be occasionally given to the hotbeds; and the Cucumber plants may be ridged out, as it is called—that is, the ball of earth planted in the middle of the bed, on a heap of good rich loam and dung, and the bud in the middle of the plant must be taken out to make the plant branch sideways.

We presume, on your reading former directions, and attending to the routine business already mentioned.

Prepare a slight hotbed for tender annuals, which must be sown some time next week. Shake about the stable dung with that it is to be composed of. If you have a garden-frame pile some dung into a square flat heap, about six inches larger every way than your frame is, and two feet six inches high will be sufficient. It must be beaten down with your dung fork, as you pile it, so that it may be compact; then place in your frame, and put the glass on, the heat will rise in a day or two, when you may put in three inches thick of good loam and dung, such as we recommend for almost every thing. If you have Dahlias to strike, and have a hotbed already at work, you will be able most likely to make room for your tender annuals in pots to be placed among them; if the heat of your Dahlia frame is on the decline, the new bed will do for your cuttings and the old one for your annuals; but we are supposing you have not, when we direct you to make one, that each subject may be independent of any other. This hotbed will be in good order to receive your seeds by next week.

A FEW PRETTY ANNUALS

THE seeds to be procured must depend on your extent of garden. In a very small one regard should be had to those which afford most flower, and continue in bloom the longest period. We will suppose, if you want a few sorts, you will take the first few, and we have regard to perfume, as well as appearance, and also to variety. It does not, however, follow that the first few are the best you could buy, but that, if you can have but a dozen, they are the best adapted for your purpose. We make no distinction yet about tender or hardy; we are old-fashioned enough in our notions to consider that Mignonette, Sweet Peas, and ten week Stocks, are so necessary, that if there were but three kinds to be sown, these should be the three best. The following will be found very beautiful to follow up with.

COLLENSIA BICOLOR, dwarf, with a spike of blue and white flowers, very brilliant and rarely on the best ground, reaching more than a foot and a half high, blooming from May till frost.

NEMOPHYLLA INSIGNIS, very dwarf, not more than nine inches at the most, and in most ground only six, with abundant flowers, like a very bright small *Convolvulus*, that is, the shape of a shallow funnel, or the mouth of a trumpet, blue all round, and white centre, and is in bloom from May till frost. There are other varieties of this.

COREOPSIS TINCTORIA, as the people who try to rule such matters have presumed to call it, as soon as the original name had become familiar. *Calliopsis Bicolor* is a branching, elegant, thin stemmed plant, growing two feet high, with abundance of gold-coloured star flowers, with a deep brown centre, and is in bloom from July till the frost. There are other varieties of it.

DWARF ROCKET LARKSPUR, a pretty dwarf spike of flowers, not more than one foot high, varying in colour, comprising dark and light pink, dark and light blue, and white; in flower in July, and for a month or six weeks.

CHINA ASTER.—Many varieties, a foot and a half high, flowers star-shaped, and occasionally double, comprising blue, pink, white, and striped in all the shades. Blooms from July till the frost.

FRENCH MARYGOLD.—Height a foot and a half—colour gold and brown—form of a star, if single, and a flat sugar-loaf when double: generally a reddish brown petal, tipped, striped, or edged twenty different ways, with bright gold colour.

LUPINUS NANUS.—Very small dwarf Lupin, not more than a foot high, with a dark blue spike of flowers, blooming in July and August.

ZINNEA ELEGANS COCCINIA.—A beautiful plant, rather coarse in its foliage, and one of the few which has not much improved by garden culture. The brilliance of the scarlet is almost equal to the *Verbena*; but the numerous seed-

ling varieties, which seem to run into all colours, render it difficult to procure the true *Coccinia*. It is a roundish flower, the size of a crown piece, but formed like a star, except that the ends of the petals are blunt. Flowers from June till frost.

CLINTORTIA PULCHELLA.—A beautiful dwarf plant in its season, literally covered with small brilliant flowers of an odd shape, with three colours, in which bright blue predominates; not more than six or eight inches high, and flowers in July and August.

ERYSEUM PEROVSKIANUM.—Dwarf plant, like a very small wall-flower; but the bloom is the brightest orange colour, and makes a splendid show, generally not more than a foot high, and blooms from the end of May till the end of July.

GILLIA TRICOLOR.—A dwarf plant, not exceeding one foot, small flowers like little cups, black, blue, and white; blooms abundantly from May till frost.

BALSAM.—An elegant plant, with long leaves, thick transparent stems, covered all round in the season with flowers (very double, if good sorts), and the leaves standing out beyond them. The colours vary from brilliant scarlet, and bright purple, through every shade to the white, and some mixed and shaded in every variety. Can be forced in pots to four feet high, but in the ground not more than two feet.

LEPTOSIPHON ANDROSASIUS, a dwarf plant, with small leaves, almost like fennel, and with a lilac or white bloom, a neat and pretty, but not a brilliant flower; blooms from May till frost.

LUPINUS HARTWEGII, a fine Lupin, two feet high, blue and white, with a good spike of flowers in July and August, and part of September.

LUPINUS MICRANTHUS, a fine dwarf Lupin, not exceeding one foot, and with small flowers.

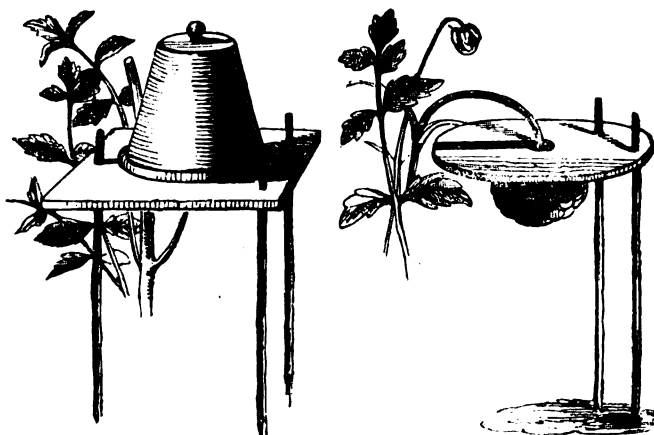
WHAT OTHER PEOPLE SAY.

THAT *old* trees of the Greengage Plum bear much finer fruit than young ones.

That Spirits of Tar are an excellent manure for Carrots, in the proportion of one gallon to sixty or seventy square yards; and that the best way to apply it is to mix it with sand, and sprinkle the sand equally over the ground, after it has been dug, and before sowing.

That there are so many dear *Geraniums* coming out, season after season, that it is all but impossible for people of moderate means to make a selection; and that very few of those that came out last year were so good as the old one called *Conservative*.

That the reason the roots cling to the side of a pot, and grow freely there, is because there is more room for them, and they like to get where the earth is lightest.



Encyclopædia of Flowers.

A COMPLETE TREATISE ON THE DAHLIA.

AFTER so much has been written about this plant, it would seem almost superfluous to give a familiar treatise; but when it is considered that most writers, instead of informing us of its habit and character, have wasted their time and the reader's with speculations on the particular date of its introduction, and that those who have written and talked most about it, appear to have known least about the practical means of growing it in perfection, it is quite possible, we may offer, in a few pages, more that concerns the grower than he will find in the most elaborate works. All we shall say of its origin is, that it was discovered by Humbolt, in Mexico, about 1789, sent by him to Spain, and brought from there into England, by several persons, among whom were the Marchioness of Bute and Lady Holland. Had there been at that period as much opportunity of exhibiting the productions of a garden as there are now, and as much emulation to be first in the field with a new plant, there had been no difficulty in finding to whom should be awarded the palm of precedence; but as it is, we think the less that is said upon the subject the less danger there will be of doing injustice. It was named *Dahlia* in honour of the Swedish botanist Dahl, by Humbolt, which name it retains, although there was an attempt made to change it to *Georgina*, in honour of George a German botanist, a practice too common in our present times, any pragmatistical botanist seeming to feel quite at liberty to make changes, much to the inconvenience of that portion of the public who take an interest in their gardens. The *Dahlia*, as introduced, was, however, but a single flower, very sportive in its colours, when raised from seed; and though we are informed by a modern book-maker, there

are ten or a dozen distinct species to be procured in England, we think it would puzzle a much better informed person to point out half the number; and, as a passing observation, we may say that people are too apt to give the distinction of "species" to plants which are only "varieties" abroad, but which are thus exalted because they come from abroad — varieties which often prove to be as inconstant as the seedlings raised in England, and no more entitled to be called a species than a new coloured or new formed flower raised in this country.

EARLY VARIETIES.

On the first public distribution of the *Dahlia* here, they were only single flowers, and the Nurseries soon possessed a great variety of shades and colours. We have heard Mr. Dennis, of Chelsea, at a very large meeting, claim the honour of raising or introducing the first scarlet, and this, though perfectly single, was sold in considerable numbers, at 10s. 6d. per plant; in short, Messrs. Lee and Co. of Hammersmith, had to pay him more for half guinea plants than Mr. Dennis had required of them originally for his whole stock. The work of improvement was going on simultaneously in several parts of the Continent, where they unquestionably preceded us in double flowers; and we believe, imperfect as these were, they were produced by many persons about the same time. The rage for double flowers gave great encouragement to the nurserymen to raise and procure them, and every monstrous production, ugly or handsome, was first talked into notoriety, and next sold in great numbers, at a large price. Private person had no notion of quality. Those who could grow the largest number of varieties fancied they

were the most important cultivators; a man never thought of boasting of the beauty of his collection, the number of varieties was the only point he cared about. At this stage of Dahlia growing there were almost as many shapes as colours—we had single semi-double in all their stages of semi-doubleness, large, small, and middling, and we had double ones. Then there were globe-shaped, anemone flowered, China-aster flowered; and had not the rage for novelty received a check, we might have had Poppy flowered, Rose flowered, and every other "flowered" that could be at all approached, as these monsters proved more or less like any other flower in the creation, for certain it is that no plant yet cultivated in this country seemed more inclined to run out into every extravagant form: their leaves, as a friend of ours would say, metamorphosed into every shape that was ugly. It was this fact that induced us to try whether some rule should not be laid down to warrant the publication or distribution of a new Dahlia. We ventured at once to set our faces against every one of the distortions which by hundreds spoiled the gardens of the wealthy, and we knew that if we could establish at the shows any law for their exclusion, the wealthy, who never attended to show, would attend to see the flowers, and would soon find out the difference between rubbish, palmed upon them for novelty, and varieties, recommended for their beauty. In this we were not mistaken, people were good enough to believe we were right: those Nurseries which depended on the sale of monsters, were obliged to keep their stocks; and though we incurred the displeasure of some, and the open hostility of others, we succeeded in banishing the monsters for ever. In the then very imperfect state of the double flowers, as compared with what we thought might be attained, we established some rules which prevailed in the Metropolitan Society, and rapidly spread through the country. They were not so stringent as we have made them now, because had we gone at first as far as we have since, we should have provoked a kind of hostility that would have defeated us altogether. It would not have been safe at that time to have set down, as a property, a point that had not been seen, and we were obliged to content ourselves with giving only such as we could point out in some flower or other; a clever fellow, who was lecturing upon the subject of Dahlias, not long since, calls our improvements contradictions. Had he been present on the occasions of these discussions, he would have not exposed his ignorance quite so pointedly. We have so fully established, in every part of the country, the fact, that the perfection of a flower has no reference whatever to what has been attained, by showing the near approach of present varieties to the points we set forth, when it was thought impossible, that we no longer hesitate to say at first what any

flower ought to be to reach perfection. It is too late in the day for us to claim to be the originator of this doctrine, because the opposition to it at first, on the ground of there being no such flowers, has rendered it too notorious to be doubted; and when we see publications repeating a lot of nonsense, written or said by men who fancy themselves very clever, we rather regret the ignorance of those who give publicity to it. A man may talk a good deal of nonsense among eight or ten persons, who, in their own happy ignorance, think all they do not understand is learned, and, if it please the party, such pleasure ought not to be disturbed; but the man who publishes is as cruel as the ostrich-hunter. The poor animal pokes his head into a hole, and fancies he is all right; the hunter, seeing all the body exposed, deprives the happy creature of his plumes. The very clever persons who now scribble about flowers and their properties ought to be a good deal more civil to us, seeing that they are indebted to the Horticultural Journal and the Gardeners' Gazette for every idea worth a farthing that they use. This little digression is not without its use, because there are people who will let others sow, and reap, and even store, and then steal the produce. It is not so safe a trade as they may imagine. However, the Dahlia rapidly improved from the very season we wrote about properties, and the improvement became more conspicuous the instant the gardens were cleared of the monsters. The very first decidedly good flower was the Springfield Rival, and its history was curious. We found it at Mr. Perkins's, at Springfield, among a very few seedlings raised by Mr. Lynes, the gardener there, and Mr. Hopwood, of Twickenham, being present, wanted us to buy it for him. We offered £10—at that time considered a good price for a seedling Dahlia. Mr. Lynes said he could not give an answer because Mr. Inwood had offered him money for a choice from the whole lot. It turned out afterwards that Mr. I. had offered £5, and our offer produced an advance. We could see in that flower, surrounded as it was by comparative rubbish, a new race of Dahlias, and we look with great contempt on pretenders, who profess to dictate what flowers will produce good seedlings, when it is notorious that Springfield Rival was produced from a flower that we should now throw to the dunghill, for there was not a variety in cultivation before Springfield Rival that would be worth a place now. This flower was thenceforward the model, and though not up to our model, it showed every body what might be obtained by perseverance, when this beautiful variety could be produced from flowers so infinitely behind it in quality. From that time the double Dahlia was in a fair way, and Mr. Widnal, the earliest of the large raisers, produced the same season, we believe, his Perfection, certainly the next best variety of the day. The Dahlia has

progressed very much since that period, but those two flowers remain, and may be shown occasionally in the very best stands of our choicest varieties, without detriment. We consider, upon the whole, therefore, that the nature of the Dahlia is altogether changed—its habits, its flowers, its character, all require very different treatment to that which would do for the mere botanical plant, and, strange as it may appear, the plant has been so changed, in despite of the opposition of botanical professors, who took great pains to cry down the double varieties, and one, no less a man than Doctor Lindley himself, publicly, in the horticultural rooms especially, when speaking of the Dahlia, ridiculed what he pleased to call hybridization and florists' varieties altogether, at the very period we were using our utmost influence to elevate the flower. Taste, therefore, has triumphed over the schools, and single Dahlias are banished.

SOIL.

There is a strong notion among too many Dahlia growers that a soil cannot be too rich. This is a mistake. Soil cannot be too fresh, it is true, and of all soils, that which produces good grass, as the top spade full of a meadow, is the best. Now, although the analysis of soils in different places will produce very different results, the top spade (or spit, as it is called, and which may be taken to mean the top nine or ten inches), in good enclosed meadows, of some years standing, will be found very generally of the same character. If it produce good grass, it will generally be found good loam for a foot below the surface, and we have seen very many instances of the Dahlia being grown the first year of breaking the ground, without any other assistance than the decomposition of the surface turf will afford, and the following year they have done fully as well without the addition of any thing in the way of manure. Where the ground is very poor, and has to be made, as it were, there is no addition equal to the soil formed by rotten turfs, cut tolerably thick, which may be estimated at one half loam, and half vegetable mould, but this should be laid on in abundance, and will be far better than dung of any kind. Among the results of planting the Dahlia in soil that is too rich, the principal one is, that of remarkably vigorous growth, with little bloom, and that little bad. We are not going to discuss the theory of an evil which suggests its own remedy, because it would be a loss of time. We have observed in many gardens the plants growing luxuriantly, the foliage large, the health unquestionable; but while all other persons had their collections in bloom, those we allude to were only showing bud, and they had not fairly flowered before the season was gone, and the owner disappointed. We have seen the same result when the ground lay low and wet. Ramping growth, and little or no bloom, but, having

taken some pains to seek for instances of newly broken up ground being used for this flower, we have found no exception to a fine bloom. From this we conclude that vegetable mould is the best addition that can be made to ground simply impoverished, but that where it is very poor, it should have both the loam and vegetable mould also in pretty even proportions. If a meadow, or any portion of it, were to be appropriated to the growth of the Dahlia, it might be advisable to plough the portion intended to be planted four inches deep only at first, so as just to turn the turf bottom upwards, and this should be done while the rooks are about, for they will pretty well clear it of the bots or grubs which are too often to be found in abundance. The next ploughing may be deeper, and the oftener it is turned over in March, April, and May, the more likely are these plagues to be cleared away, and the better order will the ground be in. If an old vegetable garden is to be used for the plant, much depends on the character of the soil; generally speaking, if it has brought good vegetables it will bring good Dahlias, and it will be more likely to be too rank than too poor. Nevertheless, it is possible to counteract the effect of too rich a soil by abstaining from watering after planting, or by a mixture of sand with the soil at planting. In a garden on one side of Richmond Hill we saw, a few years ago, some of the then popular varieties of the Dahlia plants more than twice the height and size they usually attained, and with hardly enough flowers on them to make them worth growing. The gardener explained to us that the soil was not only rich, but that the springs rose all over that side of the hill, and he pointed out to our notice that all plants were excited to vigorous growth and foliage in the same proportion, and that the flowers came later, and in less quantity than they did in the low ground adjoining, where, in fact, they were in very good order. It may be assumed that, in general, the poorer the ground the earlier the bloom, if the plants grow at all, and there is a free air, and in very many kinds the blooms, though much smaller, are more perfect; while, on the contrary, the stronger the ground, the later and larger they bloom, if they have time to mature themselves before the cold injures them; but, it must be recollected, that beyond a certain degree of vigour the plant flourishes at the expense of the bloom, and again, that as one of the great sources of nourishment is water, and another is pure air, a Dahlia in the country in poor ground well watered will far excel those grown in rich ground in confined situations, or near the smoke and vapour of manufacturing towns. As in most gardens the Dahlia is required for an ornament to certain departments, and the same borders and beds are appropriated year after year to their growth, it is advisable to try several dressings by way of experiment, and without

interfering with the entire collection (which may at all risks be grown the first year with a good spade full of leaf mould to each mixed with the soil a foot round it and under it,) with respect to trying useful experiments, apply (1) a spade full of stable dung rotted, (2) cow dung rotted, (3) loam from the top spit of a meadow, (4) sand, (5) tan rotted to mould, or (6) chalk, in each case mix it with the earth, for a foot all round, and under each plant, all the plants being the same variety. People may analyze soils as much as they please, and apply their theories, but the same soil in all respects as to chemical properties will not produce the same effects in all situations, and therefore one experiment on the spot is worth fifty lecture room lessons, and the man who builds his reputation on actual experience gained on the spot he is destined to cultivate, will be wiser and better than the mere listener to lecturers or books. In one season he will see which of these dressings answers the best in the situation appointed for his Dahlias, and it may prove contrary to all he has read, simply because the clever men who settle what is to be done for a plant by what the plant is found to contain when grown, do not happen to know how much of anything it takes from the atmosphere and how much from the ground. In other words they have not analyzed a bottle of the air,* as well as a spade full of the soil, nor calculated the effect of local circumstances, of which lecturers have little knowledge, and over which they have no control. One of the favourite theories is that if a plant on being analyzed is found to contain iron, the ground in which it grows should contain iron in abundance. If it contain silex, it should find that in abundance; if it contain lime, that must be supplied in quantity. If the theory were carried out to the full extent, man ought to be fed on chalk and iron, simply because the bones contain one and the blood the other; and if it be objected that men contain flesh, and therefore require it, the theory is quite as unfortunate, unless the professors could burke the thousands of men who have foresworn, and beasts which abjure the use of animal food, and live on vegetable diet alone. Let it not be supposed that we object to the application of scientific principles to the commonest of our successful operations; all we complain of is, that those who know little or nothing of practice, are pestering us with all sorts of theories, and going to one extreme which is as detrimental as the other—assuming things which are as unreal, speculative, and futile, as the operations of the ignorant are unprofitable; all we recommend is, that each man should experimentalise on a small scale, and be content with the ordinary way of doing things, until his own practice, in small matters, bring home to him a conviction of the best way to operate on a more extensive scale.

* Yet a good deal they do is like a bottle of smoke.

In trying his experiments on a few Dahlias, in the way we have mentioned (and, if he please, increasing the number of experiments), he may find one succeed better than another, and even better than his general collections. If so, he must not go head over heels and serve the whole so the next season, but merely extend the experiment a little (particularly if his collection be tolerably well grown), and by no means conclude, that because one came finer than the rest it was entirely owing to the treatment or the soil: more or less water at critical times—the shade of a tree keeping off the sun or breaking off the wind, or the root of a tree drawing away the nourishment, or, to all appearance a less important object, might deteriorate or improve a plant. This may be an argument for trying each experiment in several places the first year, but, generally speaking, the soil in which a Dahlia grows, if it be not of an extreme nature, does not affect it half so much as the air and situation, and the treatment during its growth.

UNCERTAINTY OF THE BLOOM.

When a collection of Dahlias are grown in one situation, and each variety grown in duplicate, or even quantity, it will nevertheless be found that some plants yield double and fine flowers, while others, propagated from the same tuber, and to all appearance treated in all respects the same, will produce semi-double, or even single blooms. It will also be seen that at some parts of the season they will be single, and at other times be semi-double, or double,—nay, on the same plant at the same time may be found some blooms remarkably fine and full, and others with hardly two rows of petals. We have not found any of the great theorists come forward to account for this, but the grower will at least concede thus much to us, that the Dahlia, like the tulip, though quite in a different way, is at the best a very uncertain flower. We have, from observation, endeavoured to persuade ourselves that perfection of bloom is only attained when the nourishment supplied to the plant from the tuber is fully reciprocated by the supply afforded to the tuber by the plant, and that this balance cannot be sustained long together is seen by the short seasons in which the perfection of bloom is maintained. While the weather is very hot, the evaporation of the juices of the plant is so rapid, that the balance is against the plant, and the tuber has enough to do to supply the plant, as it slowly grows: when the weather is cloudy and wet, or the dews are heavy, the plant is soon able to return the favour, and the perfection of flower ensues. Hence, we find whole collections, after coming to perfection, go back again if a hot season comes on, and good flowers return a second time if the season comes again favourable; a treatment which we have founded on this hypothesis has proved very successful, though it is

quite possible our theory, notwithstanding it is founded on observation, and in part confirmed by practice, may be very groundless; or, if it be right, we may have made but a bungling affair of an attempt to explain it. No one, however, will deny the soundness of the foundation upon which we build it, however they may quarrel with the design or the execution of the superstructure. And now we proceed to the culture, beginning with

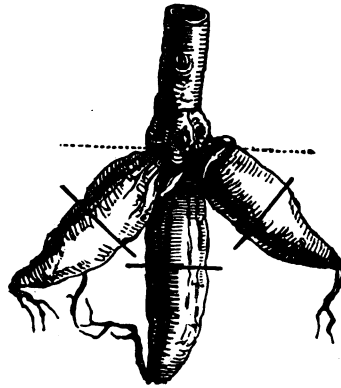
PROPAGATION OF THE DAHLIA BY PARTING THE ROOTS.

The tuber of the Dahlia has rarely any bud or eye, except where it joins the stem of the last year's plant, the part called the crown; and it will be frequently found that the tuber is very small at that end. It is, therefore, of the greatest importance that in taking these up, and preserving them for the winter, they should not be broken, twisted, nor bruised at the end which joins the crown; and if they are broken, or bruised, or twisted, so as to hang loose, they may as well be taken off at once, for the crown derives no benefit from any that hang loose. These removed, it is often found that the strong ones which are left are too long to pot conveniently; but they may be shortened without absolute injury, though as the shortening cannot be of any service beyond the convenience of potting, it should not be done wantonly. In April, let the roots be put in a warm place—say, for instance, that the cultivator has no frame, or hotbed, or greenhouse—they may be put in a basket or box, in a warm cupboard in the kitchen. If he have a greenhouse, they may be put in the warmest part of that; or if he have a garden-frame and glass, let it be converted to a hotbed with a few barrows of hot stable dung, and two or three inches of soil on it, and the roots be all thrown in there, and be covered up with the glass. If the kitchen or greenhouse be all the convenience possessed, the roots must be brought there early in the March. If, on the contrary, there be a hotbed, or the grower has a hothouse, the end of the month will do. The eyes will soon be developed, and begin to shoot; when these are completely shown, the root may be cut into pieces, care being taken that there is a lobe or portion of the tuber to each eye or shoot.

In this, the root is supposed to have an eye to each lobe, but it will not always prove so; with a strong and sharp knife, they must be so nicely separated, by a careful division of the crown, as to preserve a portion of tuber to each eye or shoot; these portions of the tuber may be shortened so as to go into a 60 or 48-sized pot, and the tuber must be sunk into the pot low enough to cover the part from whence the eye shoots. Thus potted, they must be returned to the place they came from, whether it be hot-house, frame, greenhouse, or kitchen, as near

the light as possible: those in the hotbed or hothouse to grow until the beginning of May, and then be removed to a cool frame or greenhouse, or room in the dwelling, to get hardened a little before planting out in the ground at the end of the month. Those which, for want of better accommodation, make their growth in a greenhouse or dwelling-house, may remain there, without change, till planting time. But where the quantity is too great to pot off at all before planting, the roots, had better be parted as before directed, and then be planted out at once where they are to bloom; in this case it is not necessary to cut away any part of the lobe to shorten it as if for potting, but to plant in holes, with the crown three or four inches below the surface, about the middle of April; the shoot will then not make its appearance above ground till the middle of May, when it will escape the frost.

The annexed diagram shows how a tuber may be parted and the lobes shortened; but if it were potted for propagation, the dotted line shows how deep it should be sunk.



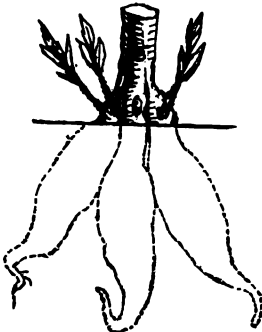
If, however, any should come up early in May, they must be covered with earth to protect them. These will be quite early enough to bloom from July till the frost cuts them off. If any come up with two or more shoots, which they will if there be more than one eye to the tuber, all but one should be cut off. The treatment when planted out being the same in all cases, we proceed now to the plan of

PROPAGATION BY SHOOTS FROM THE TUBER.

The tubers, when full grown, would require an enormous pot, unless they were reduced by cutting. Some of the lobes may be, therefore, cut away altogether, others may be shortened, and particularly those which grow outwards, so that they can be got into the pot without any soil at all it is enough. Supposing the pot to be glass instead of earthenware, a large root so reduced would have much such an appearance as the annexed diagram.



The crown where the tuber joins the stem should be above the surface of the soil, which should be three-fourths loam, and one-fourth sand, and there being first a piece of thin crock, just large enough to cover the hole in the pot, placed over it. The tuber should be carefully potted, and the soil shook or poked between all the lobes of the tuber, that it may be solidly planted, otherwise, if there be any part hollow under the tuber, and between the lobes, it will soon be a harbour for vermin. It is also necessary to cut away from the tubers every part that is decayed, and any appearance of rot, as, unless cut away before potting, it will spread, and perhaps destroy the whole, before the shoots are long enough to take off. The pots should be placed in a hot bed, or in the stove, or, in the absence of these, in the warmest part of a greenhouse, but if there be neither stove nor hot bed, it is far better to adopt the mode of parting the roots already treated; nevertheless, we have propagated in a kitchen, or other warm room, and in a greenhouse. When the shoots, or any of them, are two inches long, if you do not want a very large increase, you may break them carefully off by pushing them a little on one side, and then back again; but in this operation the pressure must be given quite at the bottom, as well as a little way up, by placing the broad part of the thumb against the side, and pressing down on the crown, as well as against the shoot, it will be found to break out very easily, and strike much more rapidly, than if cut off.



If this be done at the right age of the shoot, there is not the least difficulty about it, and other eyes

will shoot round the place it was broken away from. These shoots should be potted, if you have room for them, in small sixty-sized pots, or thumb pots, as they are called, which is the smallest regular pot that is made, one in a pot; but, as is frequently the case with amateur growers, you are cramped for room, put five or six in a large sized sixty pot, round the edges, and place the pots in the hot bed where the tubers are, but it is far the better way to plant only one in a thumb pot, from half an inch to an inch down, and close to the side, instead of in the middle, as the pot touching the plant assists the striking, though the shoots that are thus broken out will strike almost any where: of course, the operation is the same all through. You must go over the whole of the tubers daily, and take off all that are ready, taking especial care that the number or mark the tuber bears must be attached to all that come off it, which is best done by wooden labels, neatly cut to adapt them to the small and next sized pots; two and a half inches long, half an inch broad, and the eighth of an inch thick, pointed, to go into the pot, are the best size, for they will do even for a time after the plant is out in the ground, as well as for all the time it is in the pot. Those shoots which are put into the hot bed to strike, will root generally in a few days, and begin to grow. They must, however, be watched daily, and the glasses kept over them, and air, must be given by tilting the sashes at the back of the frame, with a stone or piece of wood; this must be done to let out the steam, even when air is not required. The most proper way to strike these cuttings is, to prepare a hot bed on purpose, and that in which the tubers are, should be kept for them only. However, it may happen that the grower has but one frame, and not tubers enough to fill it; in such case the shoots may be struck in the same frame. In some cases there may be exceptions, but generally speaking there will be three or four shoots come round the place from which the first is taken, so that there will be a constant succession; the number to take off daily will be increased, and the same process is to be continued to the whole, until the grower finds he has enough, when he may throw away the tubers, or part them into as many pieces as there are shoots or eyes remaining, giving a portion of the tuber to each shoot; and these portions of tubers may be cut shorter to adapt them to as small a pot as possible, but the base of the shoot must be planted under the surface, for a new tuber will be formed from the base of the shoot above the piece of old tuber, and the portion of the old one attached to the shoot will support it until the new one is sufficient to do so; when planting time comes, the operation is much the same in all cases.

PROPAGATION FROM CUTTINGS.

In this case the shoots are allowed to grow

until they have three pair of leaves, and they are cut off just under the second pair and above the lowest pair. Where one cutting is taken off plenty of others follow, and these are to be served the same way; there must be care used that the cuttings taken off are from three to four inches long, and that you leave a pair of leaves below, for at every leaf there is an embryo bud which will form a shoot, which shoot will in turn yield a cutting and its two other embryo buds. But, according as the tuber yields buds in quantity or otherwise, so may the growers be careful or careless as to how they take their cuttings. It is as possible to get two hundred plants as two dozen, by only encouraging the growth and making the most of it. The cuttings when taken off may be struck the same as shoots, but they do not take root so rapidly. It must depend on the room you have whether you will plant a dozen cuttings round a 48-sized pot, or put one cutting each into twelve small ones; in one case but little room is taken up while they are striking, and this is often of importance. When they have struck root they must be potted singly into 60-sized pots, or thumb pots, kept in heat a few days to establish them, and then be replaced under some kind of protection till planting time.

PROPAGATION BY EYES.

In cases where it is of great importance to increase a plant, they may be propagated by eyes, which will double the increase. In this case there may be half a dozen or more plants made out of one shoot or cutting taken off properly. Suppose there be three pair of leaves besides the end joint, the end joint, which will have two leaves, and the heart, may be cut off close to the under leaves, which may be carefully removed, and this forms a cutting; the stem left is to be split up, each half having its two or three leaves. These are to be cut close under each leaf: half the portion of split stem, and the whole of the leaf will remain, and these must be put an inch into the soil, each 48-sized pot holding six planted against the sides. The bud at the base of each leaf will make a plant if placed in a hot bed, and when they have become well rooted they may be placed in separate pots and kept growing in heat until they are six or eight inches high when they may be taken to a cooler frame.

PROPAGATION BY GRAFTING.

This is neither desirable nor profitable, but it has been done frequently to the disadvantage of the buyer; the method of performing the operation is simple enough, the cuttings of the Dahlia intended to be grafted, should be strong and healthy. A healthy lobe of a

tuber should be procured and with a sharp knife an incision should be made like a notch one inch down it, and the cutting should be cut into an angular form, two sides being sloped, and the third or outside, being formed of the untouched surface, the leaf being left at the bottom of the cutting, this must be tied and planted with the base of the cutting as much below the surface as will cover the tuber, but not smother the heart of the cutting. In a graft of this nature there will be formed a new tuber, but if there be not a leaf and its embryo bud below the surface, no new tuber will be formed, and the old one is useless. There are other ways of fitting, for in all grafting the only real point to attend to is a good fit of the parts. In many cases, grafted plants have been sold, and the buyers have never seen a second season's growth from their purchases.

PROPAGATION FROM SUMMER SHOOTS.

The most important operation in Dahlia growing, is that of securing an increase from the shoots, which can be taken off after the plants have begun to grow in the open ground; these should be struck in the same way as other cuttings, but they must be selected carefully, cut as others are cut, close up to the under side of a pair of leaves, and be struck in a hot bed in full perfection of heat,

RAISING FROM SEED.

The seed should be sown in pans or large pots any time from the beginning of March till the middle of April. If you have convenience pot them as soon as they have four leaves into thumb pots, one in each, but as we mostly raise too many for this, let the sowing be thinner and let them be put into any sized pots that are at liberty as many as the pots will conveniently hold, there to grow till planting time; if there be a hot bed at liberty altogether, there may be any light soil used three inches deep, and the seed be sown all over it, or the seedlings in pots may, as soon as they are large enough, be planted out two inches apart all over one, there to remain with plenty of air, and as the heat declines it is not to be raised again. In any or all these cases they will be ready to plant out the beginning of June, quite time enough in good ground to show whether they are worth keeping. But if the grower has no convenience but a greenhouse or dwelling house he must sow his seeds earlier and be content with slower growth.

HARDENING OFF BEFORE PLANTING.

If Dahlia plants be taken direct from the hot bed to the open ground they receive a check which often retards, and sometimes greatly injures

them, therefore they should always be removed from the hot bed, to one declining, or the one on which they are all placed should be allowed to decline, so that before they are actually planted out they should have been inured to a cold pit or greenhouse or some other place with no more protection than will just keep out frost; they will then grow the instant they are put out, feeling no important change,

PREPARATION OF GROUND.

This has been treated of so fully in an early part of the paper, that we need only add a few hints. If they are to be grown in the same quarter year after year, a compost of loam and dung will be the best dressing, and, if possible, the identical spots of the present season should be as far as possible from those of last season: thus, if last year they were planted where the stars are, this year they should be planted where the circles are.

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Trenching, if the ground will bear it, and leaving it in high ridges, till planting time best prepares the ground; and unless the dressing can be liberally done all over the surface, it is better to confine it within a half yard of the plant all round. When planting time approaches, the ridges should be levelled, and the dressing wheeled on to the ground, in patches, close to where the plants are to be placed. If to be dressed all over, it is better to do it when it is trenched; but unless this can be done very extravagantly, or the ground is naturally rich, it had better be done in patches. First level and roll the ground, next it is well to drive strong stakes down hard in their exact places, which should be six feet apart every way, and to have the dressing wheeled on close to them. This dressing may be forked in and mixed in a patch, two feet round, and eighteen inches deep, taking care not to disturb the stake. All this may be done any time in April, or the first fortnight in May.

PLANTING.

At the proper time—that is 20th May to the same in June—according to the situation, turn the plants with their balls of earth out of the pots: with a spade turn over and break one spit of earth in front of each stake. Make a hole in it; sink the ball two inches below the level surface of the ground, in a trifling hollow, as close as convenient to the stake. Water it in well, and saturate the ground all round it. If they are tall enough to bear it, tie the plants at once to the stakes to protect them, and put the flower pot, from which each ball is taken, on the top of the stake; or if you have them, put the pots on

short sticks, that earwigs and other vermin may easily get into them.

OF PRUNING AND TRAINING.

Training the Dahlia is completely a matter of taste. Having a strong stake next the plant, the middle stem should be fastened to it as it grows. To this may be added side stakes, to train a Dahlia like an espalier fruit tree; but, generally speaking, the best way is to put three or more others round it, sloping outwards, and fasten sticks from one to the other, forming a complete triangle. The plant ought to be allowed to grow its natural way, and side stakes should be placed as they are required. It is not proper to cut away much of the plant with a view of strengthening the rest. All branches that are in each other's way ought to be taken off, and the greatest care must be used in cutting away those portions of leaves and branches which would rub against any of the blooms selected for exhibition, and to pick off all the flower buds that are on the same stem, and also to cut away any shoot that may be growing higher up the branch than the bloom stalk itself.

DESTRUCTION OF VERMIN.

The earliest opportunity go round and put a bit of moss in the bottom of each pot, and from the instant it is done let the pots be examined, and the earwigs killed daily: for every one killed before the summer advances, might otherwise be the founder of a whole family. It is of no consequence if but few are found, but it is of the highest importance these few should be destroyed.

REMOVING EARLY BLOOMS.

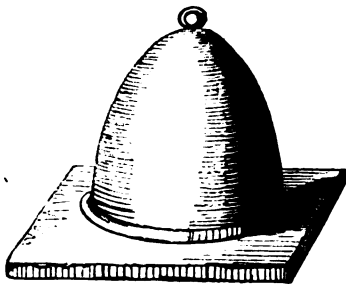
It is quite certain that the early blooms of a Dahlia, if they come in June or July, are mostly faulty, and if not faulty, they come too soon for any public exhibition. The faulty blooms must be plucked as soon as they are ascertained to be faulty, and unless they are to remain as ornaments to the garden only, all the other blooms that come too early should be taken off, for the flowers tend to exhaust the plant.

VARIOUS MODES OF BLOOMING FOR SHOW.

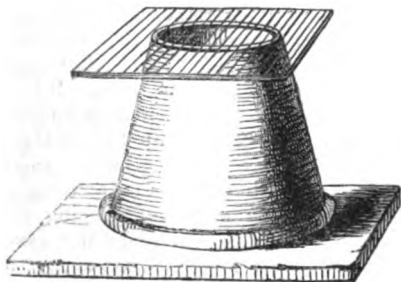
The very best mode of blooming the Dahlia is to select the most promising buds as soon as they are sufficiently developed to give promise of perfection,—to fasten these to a stake, that the wind may not disturb them, and to fasten a shade to the stake to keep off the violent strong heat of the sun, for no bloom is so brilliant in colour, so lasting after it is cut, or so perfect in appearance, as those which are grown in the open air, but there are many ways of artificially growing a bloom, increasing the size, altering the colour, and, by contrivances after

cutting, bringing up the centre. If we mention these, it is to account for productions which are almost disheartening to the amateur. The growers in Sussex, some time ago, had a very effective mode of giving the flower all the benefit of the air and shade: they had a board, large enough to be a good protection all round the flower—this board had a hole in the centre, and a cut from the edge to the centre, just large enough to allow the stalk to pass; they put the bud to the centre of this board, bent the board downwards, and fastened it on two sticks, as shown at the beginning of this paper. It then has *no sun*: all the air, the dew of the atmosphere, settles on it, and it is very little worse, and sometimes it is better, than if it were shut up from the wind. The modern way of blooming is to use a similar board, to make that stand in a similar way, but strong enough to hold a pot when placed on it. The bloom is thus brought to the centre, the slit through which the stem passed is stuffed with moss or cotton, and the pot is kept over it (having a cork in the hole to admit no light), the colours, however, are different, they are not natural: a blush flower passes for a white, a tipped yellow flower will come pure yellow; colours of all kinds are less brilliant, but the flowers are larger, and frequently the eyes bloom more perfect. This plan is also shown at the beginning.

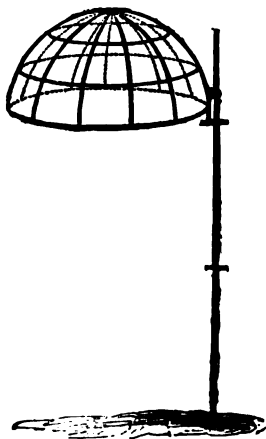
The Norwich growers have two, we may say three kinds of covers, for they have solid ones made for covering up dark, thus



They have also glass covers to cover up light; but an improvement has been adopted, a cover like a flower pot, without a bottom, that they can cover either with a glass to let in light, or a piece of wood to keep it dark.



These have a groove in the bottom to allow the glass or the wood to be cut round to fit it, so that the wind will not blow them away; but an improvement would be to use a cover made of the same material as the pot, so that without taking the glass off the flower might be darkened. However we repudiate all this artificial work. It ought, nevertheless, to be mentioned here, that many flowers are cut young by the knowing or cunning growers, for the purpose of blooming them in water, which throws up the centre a little and makes the sides fall; but judges ought to see through this, for it is a complete disguise to the character of a flower, and although it could not be very well recognised as disqualifying a flower, it is fairly a subject for reducing its merits, and must place a bloom, or a stand, that such a bloom is in, lower than those which are fresh cut, and naturally produced. It is quite certain that a few hours' hot sun, or a cold gusty wind, distresses the blooms of a Dahlia very much, but the remedy for the former is a shade made of wire, and covered with paper or canvass, which, to stand the weather well, should be painted. The form of the shade may be as shown in the annexed diagram: the stick on which it is fixed should have a few holes through it, at different heights, through either of which holes a peg may be thrust, to keep it at its proper height, and the stick may be stuck in the ground upright, or sloping, whichever is best adapted for the purpose of keeping off wind, rain, and sun, and the stem of the flower to be preserved should be tied to the stick itself to keep it steady, and great care must be taken to cut away any leaves, branches, or buds, that can be blown against the flower by the wind, for the slightest leaf will fray and spoil a bloom if it rub against it but a few minutes.



WATERING THE DAHLIA.

It is not advisable to water the plants more than is absolutely necessary, but when they are

watered it should be thoroughly, by saturating the whole ground round about them. A garden engine is the best thing for this work. It should be used with a rose upon it, like the rose of a watering pot, but smaller, and the plants themselves should be thoroughly washed with it. It clears them of green fly and thrip, and vermin, generally, if properly applied under as well as over the foliage. If the ground be well soaked, and the plants well syringed, once or twice a week in the hot weather, it will be found as efficacious as showers of rain, which can be imitated pretty closely with a good garden engine, and should be always done when the sun is going down.

CUTTING BLOOMS TO SHOW.

It is necessary to look more to fine flowers than new sorts. Look well to the properties of the flowers, and take those which approach the nearest to perfection in form, whether they be old or new. In making up a stand, contrast of colour should, however, be observed as much as possible, and they should be placed on the stand uniformly; there should be colours of about the same depth at the four corners, and if these are light, those next to the corner ones should be dark, but there are several modes of doing them uniformly. The top and bottom row should be alike as to their colour. Suppose the stand to be twelve, they may be arranged either of the ways pointed out here, or any other way that preserves uniformity.

| | | | |
|-------|----------|----------|-------|
| Light | Dark | Dark | Light |
| Dark | Middling | Middling | Dark |
| Light | Dark | Dark | Light |
| Dark | Middling | Middling | Dark |
| Light | Dark | Dark | Light |
| Dark | Light | Light | Dark |

Half the stands are spoiled by putting too many dark purples in them, and although form ought to be the first consideration, contrast and order, or uniformity, adds greatly to the merit of a stand.

SAVING SEED.

Instead of saving seed from any blooms that may by chance remain on, it should be saved from the best well-formed early flowers. Nothing can be more ridiculous than to make a fuss about this, that, or the other variety being bad for seed: the very same kinds which yield bad seedlings this year, may yield the best another season. It is an insult to common sense to pretend to have a knowledge of which

is best and which is worst of our good flowers to save seed from; the proper way is to mark good flowers as soon as they can be found, and let their seeds ripen well before they are gathered. The great want of success has arisen from people carelessly gathering all the seed pods they find on a plant, without once noticing or knowing whether they were good double flowers or not; when the seed is rubbed out, only the few outside rows of seed should be used: those which come from the centre or disk will almost always come single. But beware of being taken in by the assertions of weak men, that certain good flowers produce bad seedlings. It is the mere speculations of vain and ignorant persons, who, if bought at their own valuation, and sold at the world's, would leave the dealer a good deal minus. All they say *may be* very true: from the careless way in which seed is saved, by merely gathering the pods that are left on the plant from time to time—the majority of which are from bad blooms—the best grower in the world may have nothing good from the best varieties; whereas accident, or the natural sporting of the flower, may, as in the case of the Springfield Rival, produce excellent seedlings from bad ones; yet there is no means so effectual as marking the best early blooms of the best varieties, and relying on those pods of seed only.

TREATMENT AFTER BLOOM.

When the bloom has declined in quality, about the end of September or the beginning of October, you may conclude the plant has done its best, and therefore you may abstain from watering altogether; and in a few days afterwards dig up the root, without cutting the plant down; lay the root in the same hole with the plant, sloping down; in other words, lay it in by the heels, covering up the root with a heap of mould above it, to protect it from the frost; and when the plant has died, or has been cut by the frost, pull up the root, cut down the stem to three or four inches in length; and having fastened on the label with wire, put them away, stalk downwards, where frost, wet, and heat cannot hurt them. Some pack them in boxes of sand, some merely pile them in a heap in a dry store room, some put them into a pit like potatoes, and cover them with straw and earth, and some hang them up in a kitchen, all of which ways are proper, for they merely require to be kept stem downwards, and to be out of the way of damp, frost, and heat. It is the practice among almost all growers to cut down the plant before they take up the roots; the objection is, that the stem being hollow, catches the wet, which sometimes leads to the rotting of the crown; and the object of keeping them through the winter with the stems downwards, is to let even its own moisture drain away.

OCCASIONAL EXAMINING THE ROOTS DURING WINTER.

This is very necessary, lest any should get mildewed, or begin to decay, in which case they require attention. If mildewed, they must be wiped clean and dried, by being laid on the hot water pipes, or the flues of the greenhouse, or before a fire; and those which indicate rot, must have every spot cut away: some may be found shrivelling, these should be potted directly, but not forced until the usual time.

GENERAL REMARKS.

The Dahlia is one of those plants which requires no artificial impregnation to produce strange colours and combinations. There have been very good people, who have taken great pains to fertilize a white with the pollen of a crimson, or a light with that of a dark one, a dark with that of a light one, but they went no faster than their neighbours, who let nature take her chance. But the seedling grower must recollect, that notwithstanding all he has heard about seedlings coming good from particular flowers, he may grow a thousand without producing any thing better than we have got, and another might obtain a good one from a twentieth part of the number of plants. The great object is to save seed from good flowers, planted out for the express purpose, and good flowers only. If, however, among the seedlings there be any semi-double, with good petals, firm texture, and new in character, let it be kept to save seed from, and sow only the outer or petal seeds; but there must be something very good about a semi-double flower to make it worth keeping.

WEEKLY JOURNAL OF GARDENING.

THE directions for the last few weeks will, for the most part, apply to the present, and whatever has been recommended, and not done, should be done without delay. Planting out Lettuces from the frames or seed beds into warm borders, hoeing Turnips, Spinach, and other crops which require thinning and weeding, sowing Parsley round the edges, or in rows, if not already done, digging or trenching those places which have been cleared of their crops; still covering tender crops of a night with litter, though there may be no appearance of frost; covering the frames in which Cucumbers are growing, or Dahlias being propagated, or seeds are coming up, with mats in the evening; planting out Cabbages, and sowing the due seasons of Peas and Beans, which, if there be any large supply wanted, must be done every fortnight or three weeks, and such other routine business must of course be done.

Sow Capsicum, Chili, Tomata, Cockscomb, Balsam, Cucumber, and Melon seed, in pots, and place them in the hotbed.

Prune Roses back to a single eye, or two at most, in each branch, and cut whole branches out where they are too thick. Examine the stakes to which standard Roses are tied, see that they are firm, and the string or bast they are tied with is not rotten.

Give air to Cucumbers; pot Dahlias, if not done already, and put them in the hotbed to make shoots; or, if you have no bed, put them in the warmest place you have.

Take off the shoots from Dahlias that are forward enough, and pot them one in a pot—the thumb pot—watering them and returning them in the small pots to the hotbed.

DAHLIA SEED may be sown in pans or pots, and placed in the stove or hot-bed; or a slight hot-bed may be made up, and the seeds sown all over it. When there are four good leaves, they may be pricked out into pots, or another hot-bed. By taking out the strongest continually, and pricking them out from where they are too thick, the whole that are left may grow till the end of May, and be then planted out.

TULIPS must be carefully covered against frost. It is no use to talk of their being hardy if you mean to show, for the frost is more mischievous than any one would think. They should also be covered from the wet if practicable at all periods; it lodges in the heart of the plant, and lays injuring imperceptibly the embryo bud, and frequently destroying the bloom altogether. It is a good plan to have a cloth (of similar material to that over the roof in blooming time) just wide enough to cover the hoops or irons, for it turns off all the wet, while mats are but a partial protection from rain, besides, if the rain gets to the bed after you have loosened the mould, you will have all your work to do again: cover at night sufficient to keep off rain and frost, be the weather what it may. A moderate frost does not injure a tulip in its present stage, if it be not wet, but it spoils the bloom for the season.

AURICULAS.—The blooms of many begin to advance so much, that you can no longer sprinkle the plants safely, therefore carefully water them without touching the foliage, and examine every pot that looks more moist than the others, to see if the drainage be good; be careful to keep them from the violent wind, by some artificial shelter, for it is necessary to give all the air you can on mild days to prevent their drawing, but protection against wind, frost, and heavy rains, is absolutely necessary; tilting the glasses is but little use unless raised top and bottom, that the air may pass freely under; and if the weather be sufficiently fair, the glasses ought to be quite off. Prepare now a shady well protected situation to bloom them in under hand glasses: take care they have frequent gentle waterings, as they will in a week or two require removing from the frames.

HEARTSEASE, CALCEOLARIA, PINK, CARNA-

TION, PICCOTEE, and other seeds saved from choice flowers, should be now sown in seed pans of light rich earth. If you have room in the greenhouse, the seed pans may be placed therein, but if not, a cold frame will answer the purpose, care being taken to exclude the frost by coverings. All these would grow if sown in the open ground, but the advantage of being able to remove the pans to the sun or shade, or shelter, is great; added to which, Heartsease and Calceolarias may be greatly forwarded, and not injured by removal to slight hot beds, or the greenhouse. Heartsease may be bloomed in ten weeks from the time of sowing.

Some Hardy and Half-hardy Annuals may be sown in the borders in small patches. By this time all the bulbs in a garden have thrown up their leaves, and there is no danger of damaging them by digging the border carefully, therefore having done this, you calculate where you can find room for them. Sweet Peas and Coreopsis should be two feet from the edge of the border, because they will grow two or three feet high, but the Annuals, we mentioned last week, are most of them beautiful and dwarf, and may be conspicuous in the front ranks. The Balsam, China Aster, and Ten Week Stocks (of which there are now many varieties), should be sown in heat, because two or three in a patch are as many as would grow well, and these are better planted when they have made good growth. German Stocks may be had of twenty different colours, and would look best in beds, and it would be well to sow on a dung bed all the sorts of Annuals that remove well, though there is but little difficulty with any. Annuals sown in pots pretty thickly can be planted out in small bunches, and if only half a dozen plants out of each pinch or bunch grow, there will be quite enough for a patch. Of those successfully treated thus, all those mentioned last week may be named. The most simple way is to sow in pots—it is less trouble than sowing in the hot bed itself, for when they have grown strong, they can be placed in a cooler situation, whereas, if sown in the hot bed itself, they cannot be moved till they are to be planted out, they draw, and grow too large for removal, and get half wasted. An ordinary forty-eight sized pot will make twelve patches, for they must be taken out in little tufts, and not be separated into single plants, except Stocks, China Asters, Balsams, Cockscombs, and such like. For the borders, it is well to make the places to receive the seed by pressing the bottom of a forty-eight sized pot on the border, half an inch deep, or, if you prefer sowing them in rings, you may press the top rim of the pot instead. Sow the seeds very thin, for half a dozen or a dozen in a patch are abundance, therefore only sow enough to enable you to thin them out to this. Lupins and Sweet Peas might almost be counted and dibbed in, but when the seeds are sown, sift over each

patch some fine mould, so as to well cover the seed, and no more, and having placed a wooden label in each patch, if you have any doubt about knowing them when they come up, or a single piece of stick, to notify that there is something there, you may leave them to their fate.

Sow in a spare part of the garden Canterbury Bells, Polyanthus, Wall Flower, particularly the new German varieties, Sweet Williams, Rockets, and Perennials of all kinds. They will require to be planted out at Midsummer.

WALL FRUIT.—Finish all pruning and nailing: cut out all damaged and useless wood; nail the strong bearing wood at equal distances from each other. You may either shorten the largest branches or not as you may want or not want the growth; but in Apricots cut in all the side shoots of a branch to two inches long only.

The cuttings of Grape Vines should be formed into nine inch lengths, the bottom parts cut close off under an eye, and six inches out of the nine may be planted under ground, in some situation where they will not be disturbed. They should be shoots of last year's wood, with the eyes not far apart. Make layers also by bending down a last year's branch of a Vine, and pegging it under ground, bringing up four inches of the end above the soil.

Now perform the operation of grafting; and, as we have before observed, it matters not how the two pieces of wood are joined, so they be but a fit. The scion, or part of a branch of another tree which you wish to graft, must be fitted to the stock it is to be grafted on, and so nicely done that the barks of both must exactly join on one side, if not all over. One simple way of grafting is to cut the end of the stock into the form of a wedge, and to split the scion up some distance, cutting the inside both ways to a thin end; this is then fitted on the wedge end of the other, so that the bark of both scion and stock, on one side at least, come in contact, cover the join over with grafting wax, or clay. The way to prepare this clay is, to get strong clay, mix it with horse dung and chopped straw, and beat it until it is of a proper consistency. The graft and stock must be well tied with bast, and the clay squeezed on all round it, the form of a long oval, a good half or three quarters of an inch thick all round.

We have more than once hinted, that these weekly directions, when completed for the year, will comprise all that can be wanted in a moderate suburban garden; and for those plants which are grown in such establishments, we incidentally mention hothouses, greenhouses, conservatories, pits, hotbeds, and other conveniences, not because the plants cannot be grown *without*, but because they can be more conveniently or better grown with such appurtenances.

March 18, 1843.

ON GRAFTING.

WE have always regretted the decline of any practical work, and none more than Mr. Paxton's Horticultural Register, but, as it gave place to the present Magazine of Botany, the publisher has lost nothing. There were, however, many excellent papers in the former work, and it has imposed on many the necessity of imitating it, if they touch the same subject, or of copying it, if they will, to give plain directions. The following is one paper on the subject of grafting, and all we have done has been done to shorten it.

Grafting is a very ancient custom, as we read of it in very early writings. It is more than probable that it was first practised in the cultivation of fruit trees, to perpetuate a favourite kind, which could not be propagated with certainty by sowing the seed. All the wild originals of our garden and orchard fruits have been, by accident or continued culture, changed from comparative worthlessness to valuable products, in size as well as in quality. In the accomplishment of these results, the art of grafting has been mainly instrumental; for by transferring a shoot of an improved variety to the young stem of a kindred seedling, the true kind was thereby obtained, and in any desired number.

The advantages of grafting are manifest, and its effects upon the constitutional habit of both graft and stock are various, and form a valuable portion of the cultivator's knowledge. It is a subject well worth inquiring into, as it may lead to a right understanding of the operation itself, as well as to the attainment of those advantages which may be derived from a proper choice of the graft and stock.

We may first premise, that experience has taught us that perfect union by grafting can only take place between congenial natures. Two individuals of the same genus of plants, and in some instances two individuals of the same natural order, which the improved science of botany hath associated, will unite by grafting, and become one tree. We may next premise, that almost all plants, and certainly all fruit trees, have to pass through a season or stage of adolescence, during which they are naturally barren. If a cultivator intend to raise a fruit tree from seed, he must wait with patience until the strippling arrives at a mature age, before he can expect it to bear fruit. In this case, the advantage of grafting a mature part of the head of an old tree upon the vigorous stem of a young one, is very obvious; because its period of youth is much curtailed, or wholly disappears, as grafts have been known to bear fruit in the first year. This, however, but seldom happens, nor indeed is it to be wished, as no fruit trees should be allowed to bear before it has acquired a reasonable size of head.

Besides the advantage of transferring aged

and mature wood to young stocks, the operation has another effect, which is equally serviceable to the cultivator, and that is, its tendency to check luxuriant growth—a circumstance which renders the grafted tree at once more dwarfish, and more fruitful; and, as these circumstances are usually consequences of each other, it is an improvement clearly attributable to the operation of grafting.

The practicability of grafting, as well as budding, depends on the readiness with which the elements of the scion and stock unite; the living members of both being placed in close contact at the season when both have begun, or are about to begin, to swell under the flowing sap, instantly coalesce. If the scion and stock be nearly of a size, the junction becomes so complete, that in a few years it is scarcely discernible, more especially if both are equal in habit of growth or membranous structure; but if one be of a grosser habit and ranker growth than the other, they increase in diameter unequally. If an apple scion be grafted on a white thorn, or a pear on a quince stock, the grafts in both cases are engrossed much faster than the dwarfer-growing stocks; of course the junction is always apparent, and sometimes extremely unequal; for though there is a free intercommunication of the sap, the specific difference of the woody structure or vascular fabric being unlike, causes the difference in the diametric bulk.

On examination of the grafted part of a stem of several years' growth, by cleaving it perpendicularly, or cutting through the graft transversely, we see that there is an intimate union between the layers of wood which were about to be formed when the operation was performed, and of all the subsequently formed layers of both; but between the wood of the graft and stock which was formed before the performance, though closely and soundly adhering to each other, there is a visible division, marked by a brown line, where the two surfaces made by the knife were joined. The union of these is, however, no more than a simple adherence by means of secreted sap acting as a cement, but not certainly by any interjunction of the woody fibres.

Another advantage arising from the practice of grafting is, the certainty of perpetuating the true kind of fruit; for although it has been affirmed that the qualities of pears are deteriorated by being grafted on the quince, and that some sorts of apples are impaired in quality, and altered in colour, by being worked on certain stocks, such reports have not hitherto been confirmed; and therefore it appears that whatever may be the state or quality of the sap, as supplied by the roots of the stock, it very soon becomes assimilated to that of the graft, if, indeed, any assimilation at all be necessary.

A good deal of skill is, however, necessary in adapting the scions to proper stocks, in order to assist diminutive growth, by placing on strong-

growing stocks, or the reverse. The habit or manner of growth of the tree whence the graft is taken, is conveyed along with it; and not only the permanent habit, as is exemplified by the weeping ash, but accidental flexures which sometimes occur in upright growing trees, if these bowed shoots are used for grafts, and it is very likely that the future shoots from that graft will be also drooping, or unusually bent. We have elsewhere remarked that this circumstance happens sometimes in working the Jargonelle Pear. This tree in favourable situations, is sometimes apt to produce very strong summer shoots, which, from the weight of their foliage, or some other cause, droop downward in a waving direction. These, if used for grafts, make very unsightly maiden plants, and afterwards require much training to get them into shape and moderate growth.

Any other peculiarity of growth or habit of the mother-tree is certainly conveyed along with grafts produced by it; and, moreover, it has been said, that, not only disease, but even the age and decrepitude of the parent, are conveyed to the young trees raised from its shoots.

This idea was first promulgated by T. A. Knight, Esq., President of the Horticultural Society of London, and from a belief that young trees actually inherited the infirmities of their aged parents, which accounted for the general failure of apple trees that happened about the time that gentleman wrote his "Treatise on the Apple and Pear" (about 1795).—To strengthen his opinion, he argued that, as these fruit trees are only *varieties*, they had, as such, only a limited period of life; and when that period had elapsed, the whole of any given variety, old and young, and middle aged, dropped to decay together.

These new doctrines produced a strong sensation, particularly among nurserymen who happened to have large stocks of the proscribed varieties; and so feasible were Mr. Knight's representations, that many acted upon them in so far, that they preferred to plant the newest sorts rather than the old ones. The circumstance which suggested the idea to the worthy President was not only apparent in Herefordshire, but, at that time, all over the kingdom. The old Golden Pippin, the Styre, and Fox-whelp, were failing in all directions around Mr. Knight's residence in Herefordshire, and adjoining cider countries; and the first of these, a great favourite every where, became almost barren, and was visibly failing all over the kingdom.

We well remember discarding and throwing out a good many Golden Pippin trees about that time, which had been planted for five or six years, without making the least progress in growth, but rather declining. Two of these outcasts having been planted in a new shrubbery then making, (the ground having been deeply trenched), grew away surprisingly in their new

place, became abundantly fruitful, and are now large and healthy trees.

This result showed that there was no constitutional decrepitude or irrecoverable decay in this variety of apple; and the same results having happened to other planters who had planted the proscribed sorts on properly prepared ground in different parts of the kingdom, the impression against them wore off, and now it is almost forgotten.

It is quite true that nurserymen have no credit, nor are the trees they sell approved, if the buyers only stick them into a round deep hole in an old orchard or garden without other preparation. This mode of forming or replenishing orchards was very common, both before and since the period alluded to. A person resolves to make an orchard of one of his meadows; he digs ranks of holes, buys standard trees, puts them in, relays the turf, stakes and bushes the stems to keep off sheep, and bids, "God speed." The consequence of such a proceeding is, that the trees, from being so carelessly treated, become stunted, and at the end of five or six years, perhaps, are less than they were when planted. We make this observation because we know that the failure of new orchards so planted, was accounted for, and the mismanagement excused, on Mr. Knight's principle—viz., that the kinds were "worn out."

But we know well that Mr. Knight's ideas respecting new varieties of plants, herbs as well as trees, are not altogether erroneous. We are quite convinced that, in the first years of the existence of a new variety of a plant, it grows with greater vigour than it continues to do after it has become an old inhabitant of any one place. In this opinion Mr. Knight was perfectly right; and it may have happened that many of the favourite varieties of apples being aged trees, presented a simultaneous decay, and so confirmed, while it sanctioned, the suggestion of the President.

Although it is our own opinion that disease, as the canker, and insects, as the American blight, may be carried by the graft from old to maiden plants; yet we believe that, if a perfectly manure and healthy scion, cut from the top of an old tree, be inserted on a suitable and healthy stock, the future expansion of the graft will be as free from decrepitude (except only from the effect of working) as the first shoot which rose from the original seed.

We may now allude to other effects of grafting. If a strong and rampant growing kind of tree be engrafted upon a weakly growing stock, the latter will be much engrossed in the structure of its roots; and if a tree having numerous and attenuated spray, be placed on the same kind of stock, the future roots of the stock will be proportionately subdivided and unusually fibrous—a proof that there is an intimate co-

nection between the branches and roots of trees, and that the demands of the former impose their manner of expansion upon the latter.

We may also notice a remarkable circumstance which accrues from the kindred operations of grafting or budding, viz., a variegated species worked on an unvariegated one, will be accompanied by variegated suckers rising from the unvariegated root. This shows to a certainty that there must be a subsidence of somewhat from the graft to the stock; but what that may be, is not so easily explained. Mr. Knight, and several other very eminent vegetable physiologists, maintained that no part of the graft ever extends itself down from the point of junction with the stock; indeed, this is evident to any one taking the trouble to dissect the parts at any time after the operation is performed. But then the question recurs—What else can convey the discoloration of the leaves and bark of the graft, to those of the suckers so far below? If the variegation of leaves and bark be what it is considered to be—namely, an accidental inherent *disease*—the malady may be extended or communicated by the admixture of the sap, or by a downward contamination of the cellular membrane; but whether by the one means or the other, is a doubtful question, although the fact itself is unquestionable.

As fruit trees are rarely fertile till the vigour of youth is moderated, and some varieties are always too luxuriant to be good bearers, working them upon others of a more diminutive habit may effect valuable improvements, whether the strong be inserted on the weak, or *vice versa*. Double-working fruit trees certainly induces moderate growth and consequent fruitfulness; and it is an expedient which is not so much had recourse to as its importance to cultivators deserves.

Root-grafting is often practised, and is, or may be, of great service to the propagator of choice exotics, for which proper stocks cannot be had. A small twig of the head, placed on a spare root of the same, may raise another plant, which cannot be done perhaps by any other mode of propagation.

To show how necessary it is to be acquainted with the most suitable stocks for working fruit trees on, we subjoin a list of the proper stocks for the finer varieties of peaches, viz.:—

Early Anne, Purple Alberge, White Magdalen, Millet's Mignon, Late Admirable, Incomparable, Scarlet Admirable, Smith's Early Newington, Red Magdalen, Montauban, Noblesse, Early Admirable, Old Newington, Old Royal George, Rambouillet, and Catherine, are all sorts which take and grow best on the *Muscle Plum*; and the following do best on the *Brompton Stock*, viz.:—

Avant Rouge, Pourpre Hative, Belle Bauce, Early Galland, Belle Chevereuse, French Mignon, Grimwood's Royal George, Keusington,

Double Montagne, Superb Royal, Barrington, Bourdine, Bellegard, Chancellor, Late Purple, and the Titon de Venus.

HINTS AS TO THE CULTURE OF THE POTATO.

So important is this subject in a country which depends on it for half the food of the million, that we should blame ourselves if we omitted to communicate all that can effect the cultivation, find it where we may. Mr. Meacock had some years ago a work, now defunct, called the "*Floricultural Magazine*," and although perhaps this subject is not altogether appropriate for such a work, there appeared a paper by Mr. Appleby on the failure of the Potato crops, then a subject of great complaint. We speak now of 1837, when the author, giving his notions of the causes, offered some very good practical remarks, which will do for all times.

From the experiments and observations I have made, I have come to the conclusion, says the author, that the causes of the failure in the Potato crops are—first, over ripeness of the seed; second, keeping them too long, and in too large quantities, in the pits, and cutting, and when cut, leaving them in the sheds until they are too much dried; third, too late and too close planting.

First, then, on the over ripening of the seed. By seed, I mean the increasing tubers, which, although commonly called so, are but root bulbs or tubers, all of which terms are used. The true seed is contained in what is vulgarly called "*the Potato crab*;" if, however, the true seed were oftener sown, and the more improved varieties selected, superior and improved kinds would be obtained, which would prove of inestimable benefit to the present and succeeding generations. By over ripeness is meant the allowing the tubers to remain in the ground until the tops are quite dead, by which the vegetable sap contained in the bulb for reproducing the future plant is partially dried up and exhausted, and, by a natural chemical process, becomes farinaceous, or mealy, a quality extremely desirable—in fact, indispensable for the table—but too often injurious, and never advantageous as to producing a crop the succeeding year. To prevent this, the remedy is easy, simple, and obvious:—take up those intended for seed as soon as they have attained to their full size, while the tops are yet green. This I have tried to a considerable extent, and am quite satisfied of its importance as a point in culture to be particularly attended to. I may mention, as a collateral proof, that in the Lowlands of Scotland, and other parts of Great Britain, it is found necessary to obtain from the Highlands seed of the variety of Potato known as the Red-nosed Kidney, as they soon wear out, or prove, as the popular opinion is, that the ground does

not suit them more than one year; but, in my opinion, it is owing to the over-ripening of the seed in the warm valleys of the Lowlands and elsewhere. Now, in the Highlands the frost in autumn sets in before the tops decay, and the seed, or sets, in consequence, contain the vegetating vigour, which makes them so valuable as to be sent for at considerable expense, on account of the distance, to plant the succeeding season.

Second.—Keeping them too long and in too large quantities in the pits, and cutting, and when cut leaving them in the shed until they are too much dried. As the warm weather of spring advances, Potatoes in the pits will be growing, and, if neglected, will be so long sprouted as to rise out of the pits in large clusters, the new roots and sprouts binding them together. It becomes necessary then to pluck or cut them off—roots, shoots, and all—in order to separate the bulbs to be planted: then, still more to weaken the vegetable life, and, as if to try how much the poor bulb will bear, a knife is unmercifully applied, and the root is divided into two, three, four, or sometimes into six sets. In this still further weakened state, can it be expected that the start to grow will be vigorous, the plants produced fine, or the crop large? May it not rather be looked for that some, if not all, so treated will perish?

Under this head it may be mentioned, that the heaping up such large quantities, from six to twelve or more cart loads in each pit, is any thing but advantageous. Where vegetables are heaped together in the most favourable condition, fermentation will in some degree take place; and in the case of Potatoes, the heat arising from such fermentation will cause them to start much earlier, long before the time to plant, especially if that work be put off until the so considered more important operations of spring be over.

By too many cultivators this useful vegetable has not done with its trials yet. The operation of cutting the bulbs into sets can be done under cover on rainy days; hence the gardener or farmer sets his hands on such days to cut Potatoes. Now, after having undergone the heating, sprouting, and cutting, the sets are thrown up in a heap, under a shed or cow-house, and there left until circumstances as to time and weather are favourable to commit them to the earth; and if the season is far advanced when that does take place, the soil will probably be dry, and will suck out of the sets all, or nearly so, of the sap left after so many hardships.

Now, to avoid all this, I make my Potatoes for seed in a shady, airy situation; I place a very small quantity in each, at the most from four to six bushels, though half that quantity would be better if labour is not spared. I cover them with straw in the usual manner, and then cover them up with soil to the depth of two or

three feet, and I find the growing process does not take place to any serious extent until they are wanted for planting. In the next place, I always plant whole Potatoes, which, in my mode of planting, does not, as some might think, take so much more seed, that the advantage is not equal to the cost. I also plant immediately from the pit, with as little exposure to the drying influence of the sun and air as possible; and lastly, I choose the time for planting as near as possible to the moist weather of early spring; which brings me to the last, and, in my opinion, most important cause of the failure of the crops, even where every care is taken, and the best methods are practised; and this I consider to be too late and too close planting. I have had a remarkable illustration of the evils of late planting this last summer. The plot of ground intended to produce our winter store of Potatoes required trenching and raising, and the materials to raise it had to come out of the foundation of a new greenhouse we were putting up. Owing to that, and some other unavoidable circumstances, the ground was not ready for planting until the middle of June. Every possible care was taken to counteract the evil of late planting, and for a time apparently with success; but when the bulbs should have been formed the dry weather came on, and the plants drooped; and when the rains of autumn did come, they had not time or strength to perfect their bulbs; and the consequence was, that they were small and nearly worthless, whereas those I had planted in March the same year were good, both as to quantity and quality.

It may be said, perhaps, that this was an extreme experiment. I am willing to allow this; but it proves sufficiently that late planting, under the most favourable circumstances, is a drawback upon the certainty of a crop. Now, these Potatoes had neither been heated, cut, nor exposed; and yet late planting ruined the crop, whilst those planted early, with the same attention, were considerably more than an average crop. Had these been treated as they usually are, one half of them at least would not have grown at all; and I have observed too many fields this last season in that condition, where, if the care in saving seed, and attention to planting early had been taken, as I above have described, no doubt good crops would have been obtained.

I am aware that it is extremely convenient to the farmer to get in his crops of Oats, Barley, &c., and other spring work done, previous to planting his Potatoes, they being apparently to him but a secondary consideration; and his labourers are too apt to imitate his example, thinking that "Master" must know the best time, and hence they often lose the crops of what is of more importance to them than to their employer.

Another evil in cultivating this vegetable, is

planting too close. Every plant, to produce its seed or roots to the greatest perfection, should have every leaf exposed to the light. Acting upon this principle, I give my Potatoes more room than usual. The Kidneys, mentioned below, and, in fact, all early sorts with short tops, I planted full two feet distance from row to row, and nine inches from plant to plant in the row; and the consequence was, the full average crop of from twenty to twenty-five tubers, fit for the table, from each plant. Larger sorts, of course, I give more room; but sorts that require more than three feet between the rows, I consider are not desirable to cultivate, as the produce will not equal the extent of surface required to grow them in.

It has been argued that the causes of the failure of the produce of Potatoes are not owing to any mismanagement, but to the age of the varieties cultivated. This, however, my experience does not confirm, but the contrary. The sort known as the Aldborough Kidney, or, in some places, as the Ash-leaved Kidney, has been in cultivation upwards of thirty years, and yet produces as good crops as ever, with ordinary attention. The crops of this kind, that I produced whilst I was at Horsforth Hall, astonished every one that saw them; and I am quite satisfied, that with due attention to what I have observed above, good crops may be obtained from the oldest varieties.

The essentials of my mode of culture are, to save the seed before it is ripe, to keep them in small quantities, in pits made in a place shaded from the heat of the sun, to plant them whole, and to plant them early, not later than March, and give room in proportion to the expected size of the plants.

GARDENING INTERESTS.

OUR readers may at all times depend upon this one fact, that we shall always uphold every Society which tends in any way to advance science, and therefore, when we do say any thing to the disparagement of a body of men, who avowedly meet for good purposes, there will be something bad about the constitution or the executive. There are, at this moment, in several parts of the kingdom, establishments which, in their theory may be, and at their formation were considered, very good; but in their practice they are injurious to trade. It will be considered, by those who find it difficult in these times to do enough profitable business, that it is quite impossible a private trader can successfully compete with public bodies, which are, for the most part, supported by subscription. If such institutions—and there are many of them—send out collectors, and procure novelties, they do good by adding to the list of exotic plants grown in our own country; and all who subscribe to Societies established for that purpose, have an

undoubted right to participate in their early distribution of such novelties; but when such bodies once descend to propagate common Nursery plants, and distribute them by wholesale—when they once commence saving the seed of common flowers and vegetables, and furnishing them by thousands and tens of thousands of threepenny packets, they do an enormous injury to the Nurserymen and Seedsmen, and create an ill feeling, which it is difficult to neutralize, and impossible to eradicate. Now, we, strongly impressed with the impropriety—the injustice—the breach of faith—involved in such proceedings, unquestionably intend to remonstrate with any Societies that thus invade the interests of the Nurserymen and Seedsmen; and we strongly recommend all such Societies to abstain from distributing Dahlias and other common plants, or any of the common kinds of seed; and we as earnestly urge the supporters of such Societies to abstain from asking for them. All the Nurserymen who came forward to subscribe to such institutions, were totally unprepared to learn, they were subscribing for their own destruction; and we do hope that some regard will be had for interests, which not one subscriber in a thousand ever thought of invading, and which—considering the immense advantages in favour of public bodies over private traders—no member or subscriber would wish to see invaded. Stand clear, then, gentlemen, of the various councils. Let us hear of no more wholesale distributions of common plants and seeds, for we shall strike hard if we have to strike at all. One paper is quite enough to support these monopolists—it must be our business to CHECK THEM, by fair means and fair words *if possible*, but at all events TO CHECK THEM.

THE DOUBLE YELLOW ROSE.

(*Rosa Sulphurea*.)

THE origin of this very old and beautiful Rose, like that of the Moss Rose, seems lost in obscurity. In the botanical catalogues it is made a species, said to be a native of the Levant (introduced to our gardens in 1629), and never to have been seen in a wild state bearing single flowers. It is passing strange, that this double Rose should have been always considered a species. Nature has never yet given us a double flowering species to raise single flowering varieties from; but exactly the reverse. We are compelled, therefore, to consider the parent of this Rose to be a species bearing single flowers. If this single flowering species was a native of the Levant, our botanists, ere now, would have discovered its habitats. I cannot help, therefore, suggesting, that to the gardens of the east of Europe we must look for the origin of this Rose; and to the Single Yellow Austrian Briar (*Rosa lutea*), as its parent; though that, in a state of nature, seldom if ever bears seed, yet, as I have proved, it will if its flowers are fertilized. I do

not suppose that the gardeners of the East knew of this, now common, operation; but it probably was done by some accidental juxta-position, and thus, by mere chance, one of the most remarkable and beautiful of Roses was originated. From its foliage having acquired a glaucous pubescence, and its shoots a greenish yellow tinge, in those respects much unlike the Austria briar, I have sometimes been inclined to impute its origin to that Rose, fertilised with a double or semi-double variety of the damask Rose, for that is also an eastern plant.

As yet, we have but two Roses in this division; the double yellow, or "yellow provence," with large globular and very double bright yellow flowers, and the pompone jaune, or dwarf double yellow, both excessively shy of producing full-blown flowers, though they grow in any moderately good soil with great luxuriance, and show an abundance of flower-buds; but some "worm i' the bud" generally causes them to fall off prematurely. To remedy this, various situations have been recommended; some have said, plant it against a south wall; others, give it a northern aspect, under the drip of some water-trough, as it requires a wet situation. All this is quackery and nonsense. The yellow provence Rose is a native of a warm climate, and therefore requires a warm situation, a free airy exposure, and rich soil.

At Burleigh, the seat of the Marquis of Exeter, the effect of situation on this Rose is forcibly shown. A very old plant is growing against the southern wall of the mansion, in a confined situation, its roots cramped by a stone pavement; it is weakly, and never shows a flower-bud. In the entrance court is another plant, growing in front of a low parapet wall, in a good loamy soil and free airy exposure. This is in a state of the greatest luxuriance, and blooms in fine perfection nearly every season.

Mr. Mackintosh, the gardener, who kindly pointed out these plants to me, thought the latter a distinct and superior variety, as it was brought from France by a French cook, a few years since; but it is certainly nothing but the genuine old double yellow Rose.

In unfavourable soils it will often flourish, and bloom freely, if budded on the Musk Rose, the common China Rose, or the Blush Bour-salt; but the following pretty method of culture, I beg to suggest, though I must confess I have not yet tried it. Bud or graft it on some short stems of the Dog Rose; in the autumn, pot some of the strongest plants, and, late in spring, force them with a gentle heat, giving plenty of air. By this method the dry and warm climate of Florence and Genoa may, perhaps, be partially imitated; for there it blooms in such profusion, that large quantities of its magnificent flowers are daily sold in the markets during the Rose season.

So much for a Rose which, in a collection

makes a very gorgeous appearance. We are indebted to Mr. Rivers for the account; and it is a fair specimen of the manner in which he describes every species of Rose in his "Roses Amateurs Guide," a volume which is necessary to all who grow, or intend to grow an extensive collection. We shall, as the season advances, notice the work more particularly; but it cannot, in the meantime, be too much known, that a work, upon a similar subject, by a lady book-maker, is one of the most unpardonable plagiarisms we ever saw—always excepting Mr. Wildman's appropriation of our account of the properties of the Dahlia, and assuming the credit of originating them himself.

HINTS FOR CENSORS.

It is quite necessary that the censors of floricultural meetings should be made acquainted with the opinions of that Society on the valuable properties of flowers, and for this purpose the Society ought to publish, by some means, the rules by which they are to decide, for it is quite as important that the parties, who exhibit, should be made acquainted with the properties that are deemed meritorious, that they be not put to trouble and inconvenience to produce that which is not perhaps valued.

It is well that the Horticultural Society once informed the world that they valued China Asters above Tulips; for had they not, it would have been deemed an insult to accuse them of such a preposterous preference, inasmuch as the one is produced by sixpennyworth of seed, and the other from bulbs varying in price from five shillings to twenty-five pounds each, and of these they required twenty-four to constitute a show.

Collections of miscellaneous plants, however, still puzzle all the censors, for they have but little data to proceed on; however, it is not too late to offer some.

The first and most essential property is the beauty of the subject, whether that beauty consists of size and growth, which renders even an ordinary plant a fine specimen, or in the delicacy, grace, quantity, or colour of the flowers, the symmetry of form, or the richness of foliage.

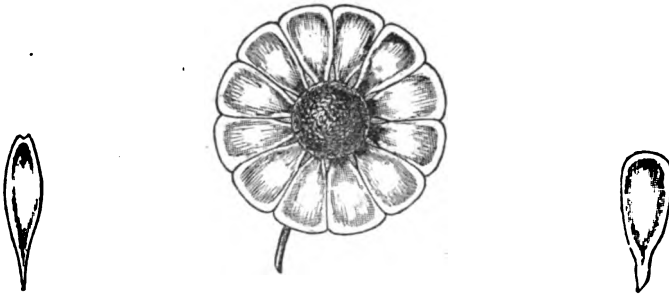
Hence rarity *alone* would constitute no point in behalf of a subject, because the absence of beauty or inferiority of appearance cannot be compensated for by any scarcity or value of the plant.

In collections of flowers, contrast, variety, fine growth, arrangement, health, quantity of flower and size, are all points to be considered. If one person exhibit twenty-four beautifully grown greenhouse plants, and another exhibit fifty, which had not among them twenty-four specimens equal to the first mentioned, unquestionably the quantity would not avail to give a

preference; but even here the censors must be careful they do not appreciate mere size in specimens, for small, healthy, well-grown and well-bloomed plants must bear larger ones, if the larger have not the health, growth, and bloom, which constitute the beauty of the smaller ones. If a single specimen be shown of an ordinary plant, it must possess an extraordinary superiority to entitle it to notice. Hence all specimens, even of ordinary beautiful flowers, which possess extraordinary fine foliage and bloom, are proper subjects to exhibit, and not improper subjects for prizes; specimens of *Geranium*, *Erica*, *Epacris*, and all common greenhouse plants, would be poor subjects unless in fine health, fine form, and profuse bloom, because every body could produce ordinary sorts and ordinary bloom.

Stove and orchideous plants have for the most part rarity and beauty combined, and the difficulty of production should in all cases be appreciated, when the extreme delicacy and beauty of the flowers are conspicuous; but there are stove plants, and rare ones, whose flowers and appearance are both insignificant, and such ought not to be adjudged half so worthy of a prize as a finely-bloomed *Erica*, *Geranium*, *Azalia*, *Rhododendron*, or *Daphne*, or other plants value half a crown.

From these observations it will be understood, that all who possess fine specimens of any thing naturally beautiful, whether expensive or cheap, are encouraged to produce them, and that those who possess things merely rare, ought not to be half so successful as those who possess more common, but more beautiful productions.



PROPERTIES OF THE CINERARIA.

It will be recollected that this very beautiful plant has a small starry flower, with narrow petals, projecting outwards, all round a yellow disk, such petals being pointed or notched. Hitherto, if a new colour, or an unusual size, has been attained, it has been considered a justification to name the plant, and send it out as a new one. All this may be very well for a time, but the period has arrived, when some regard should be paid to the form and habit of a new variety, and the properties may be summed up in a few words.

The petals should be thick, broad, blunt, and smooth at the ends, closely set, and form a circle without much indentation. The centre or yellow disk should be less than one third of the diameter of the whole flower: in other words, the coloured circle formed by the petals should be wider all round than the disk measures across. The colour should be brilliant, whether shaded

or self, or if it be a white, it should be very pure.

The trusses of flower should be large, close, and even on the surface, the individual flowers standing together with their edges touching each other, however numerous they may be. The plant should be dwarf. The stems strong, and not longer than the width across the foliage; in other words, from the upper surface of the truss of flower to the leaves where the stem starts from, should not be a greater distance than from one side of the foliage to the other. In these remarks we allude to the plant when in perfection, for, as the *Cineraria* is a constant bloomer, it continues to branch and bloom long after its proper truss has lost its chief beauty, and its form; the blooms are then more distant and straggling, but still beautiful, for every little branching truss of flowers will preserve the character of the principal one, and the plant look well to the last.

BLACKER'S ESSAY ON SMALL FARMS AND GARDENS.

In this little work there is much more plain common sense than is usually found in works of the kind; and although chiefly addressed to

Ireland, is useful everywhere. The following maxims are worthy of attention:—

1st. The ground must be thoroughly drained.

For this purpose it is not sufficient to cut drains in the low grounds; but the springs must be sought for as high up as any symptoms of them can be discovered, and the water conveyed from them, and not allowed to *force its way through the soil*; in which case it will destroy the effect of any manure which may have been applied. In proof of which, you may always observe, in such situations, the grain in that part of the field ten or fourteen days later than the rest of the crop; and in very late seasons it may, perhaps, not ripen at all.

2nd. The weeds must be destroyed; which in a little time will be accomplished by proper attention in collecting, as far as possible, all weeds, *before* putting in the crop, and by sowing the green crops in drills, and carefully weeding them afterwards; and they may even be made worth the expense of gathering, as they will yield a valuable addition to the manure heap, if applied as bedding in the cow-house. For this purpose, they should be collected before flowering. It is shameful to see, in many fields, the quantities of rag-weed ripening to seed, and impoverishing the ground as much as a crop, which might, if usefully applied, as above directed, have brought nourishment to the soil, in place of exhausting it.

3rd. All cattle must be fed in the house or straw yard, upon good food; such as rape, cabbage, turnips, mangel-wurzel, potatoes, clover, and vetches, in proper succession, will abundantly supply, according to the nature of the land; there being no farm in which some of these crops may not be raised in abundance, with the aid of manure, which the practice of house-feeding produces.

4th. Never take two crops of the same kind in succession off the same land, although this is sometimes done with potatoes, to reclaim land that has never been in cultivation; but in other cases this is not advisable; and, in particular, two-grain crops cannot be taken in succession without injuring the soil, and in the end a manifest *loss* arises from the practice, in place of that *advantage* which the needy farmer looks for; because, by interposing a *green* crop, such as clover, &c., full as many *grain* crops may be had off the same piece of land, and from the same manure, in any given number of years, by taking them in *rotation*, as by taking them in *succession*. But the rotation system has this advantage, that while you get as many grain crops, you keep the land always in good heart, and between the crops of *grain* you get *green* crops equally valuable. This is accounted for by considering that no two crops derive the same particular nourishment from the land. The roots of some sink deep, and draw their nourishment from the bottom, while others spread on the surface; and it is generally believed that plants derive their food and support from as different ingredients in the earth as the different

kinds of cattle derive their food upon the surface. Horses will eat grass which cows reject, and so with every description of cattle; and supposing the analogy to hold good in plants, it is easy to conceive that a change of crop may find the soil abundant in that kind of nourishment which it requires, although it might be, at the time, exhausted of that kind required by the crop which had gone before; and thus the ground may be as much restored by the introduction of a *green* crop after a *grain* crop, as if the ground had actually lain fallow; and experience, in a great degree, justifies this reasoning.

I am fully sensible, however, that a system of over cropping with grain will extract *every kind* of nourishment from the soil, and leave it so that *it will not even yield grass*. This is the case with the land which is left to *rest*, as it is called, by those who take three or four grain crops in succession; and the phrase is well applied, for the land is really not fit to *do any thing*. The error of this class of persons is, that they turn the land to grass at the *end* in place of the *beginning* of their course. Had *grass-seed* been sown with the *first crop of grain*, there would have been a good crop of hay, and good after-grass, and the second crop of grain would have been as good as the first; and this is what ought to be done by those whose land is not suited to clover, or who, from poverty, are not able to buy the clover seed; and even where *two* grain crops have been taken, it would be better to sow it with rye-grass, which will yield a crop on very poor land, rather than leave the land to be possessed by weeds, and such herbage as may naturally rise. The fact is, the last exhausting crop should only be put in upon the portion of the farm which is intended for potatoes, and other green crops, the succeeding *year*; which crops then give the manure to restore it to a productive state; and by this means there is no land at all lost by what is called *resting* it.

5th. The place for manure should be contrived so that it should not be exposed to any accumulation of rain water, but should receive the contributions from the sewers of the house, stable, cow-house, &c. The bottom should be paved, so that the drainage of the manure should run into a small cask or well adjoining it. Fresh *earth* should be regularly brought and spread over the manure, and the liquid in the well should be thrown *over it*; by which means the whole compost would be equally rich, and the quantity increased to any extent that could be required; and the steam or smoke which arises from the stable manure, and which is the very richest part of it, would be kept under, and imbibed by the earth so laid on, and the quantity of the earth should be proportioned to the strength of the dung with which it is mixed. While speaking of manure, it may not be amiss to remark the great loss arising from the practice of letting off the water in which flax has been

steeped, which if sprinkled over, or made into compost with fresh earth, would be found most valuable.

At the time the flax is taken out of the steep, all the rivulets in the country are strongly impregnated with the contents of the flax-holes, and those through whose lands such rivulets pass, would do well to turn the stream, where it can be done, over their after grass, or use it in watering their cabbage, turnips, &c., the advantages of which would soon be perceivable. The richness of flax water is fully shown by the growth and colour of the grass where flax has been spread to dry. I have seen a most luxuriant crop of oats upon land irrigated with flax water, although a *second* crop; which shows that if this manure was preserved, one of the greatest objections to the growth of flax would be removed.

6th. It should be the object of the farmer, as soon as he possibly can, to have his fences made in straight lines, and of as great length as the farm will conveniently admit of. It is almost inconceivable the quantity of time lost by the frequent turning of the plough, and the quantity of land thrown out of cultivation, by having a crooked irregular fence, the bendings of which the plough cannot follow.

7th. A farmer who has any understanding must perceive the moment it is mentioned, that every unnecessary ditch is so much land lost, and that his care ought to be to have as few of them as possible; and it will, therefore, occur to him, that if he feeds his own cattle in the house, all his ditches may be dispensed with, except the mearing ditches, which are necessary to keep out those belonging to other people; and this would enable him to raise hedge-rows, which never can be done if the cattle are turned out, the value of which for shelter to his crops, and supplying him with timber for all country purposes is most important. When a thorn hedge is planted, the lateral, or side shoots, should only be trimmed until the leading shoot has attained the full height you wish it to grow; if the leading shoot is cut sooner, the hedge will never acquire the same strength. Cutting the lateral shoots is quite sufficient to keep it thick at the root, if properly weeded; and if trimmed every year, it will become so solid, that birds will not find shelter in it: thorns may be leared down so as to fill any blanks that may have taken place, and if a part of the bark is left uncut, they will certainly take root if covered with earth; or the hedge may be doubled, and rendered quite impenetrable, by learing back the entire edges, cutting the stems but half through, and covering them with earth. By this treatment there will be a young growth from the root part, the same as if it had been entirely cut, and there will also be a growth from the lear which has been carried through the back of the ditch—the earth removed by so

doing being again replaced. This I have seen most successfully practised in the grounds of the Rev. Francis Gervis, of Cecil, county of Tyrone. The loss of land from useless fences is greater than any one would suppose who has not considered it; and I would almost venture to say, there are farms in this country, of twelve acres, in which the ground lost between the trench or gripe, and the backs of the ditches, together with that lost by the crookedness of the line, would amount fully to one acre, or one-twelfth part of the whole. I have known people object to this, by stating all the trouble they had taken, and the labour they had expended in making them; but if you were to meet with a man who on a journey had gone out of his road, and you pointed out to him his mistake, would you not think him very absurd if he refused to turn back, merely on account of the labour he had undergone in walking so far astray, and rather persist in going wrong, than turn about to go right? It is just the same with the man who objects to level the useless ditch—he has gone wrong, and refuses now to be set right. Now, supposing a farmer to pay thirty shillings an acre for his land, he of course loses thirty shillings annually by this waste of the surface, which is equal to two shillings and sixpence an acre upon an entire farm. It is quite evident, therefore, that these ditches should be piped and levelled in, which would have the additional advantage of relieving the crops from the vermin to which those ditches afford a shelter. There is no change whatever that will at once produce such an improvement in the appearance of a country as the levelling the crooked fences, and enlarging the enclosures; in proof of which, I would refer you to the appearance of the glebe land in Mullabrack, and the farms of Bradford and M'Cammon, in Druminnis, and Cullons and Mallon, in Ballindaragh. The improvement is such, that no one who knew these lands formerly would recognise them to be the same he had then been acquainted with.

One argument generally used against levelling all inside ditches is, that the cattle cannot be turned out to eat what is called the *fog*, or food, which is to be found among the stubble after harvest; but the gain supposed to be derived from this practice is very much overrated. In the first place, ploughing it down immediately will be of much more use to the land than any advantage to be derived from it as food; for a cow turned out in a cold or wet September day will be put back in her milk more than would pay for her entire day's feeding in the house. Secondly, upon *clay* soils the injury done to your land by the trampling of the cattle, besides the water retained so injuriously in their tracks, is beyond any thing you can have any idea of. Consider for a moment, and ask yourselves, why it is in the light sandy or gravelly soils, that sheep farming is found so beneficial. You are,

perhaps, not aware of it, but if you went to Scotland you would see upon soils of this description hundreds of acres sowed with turnips, intended to be fed off by sheep, folded on the ground, principally with a view to have the lightness of the soil corrected, from their trampling it into a kind of paste by the constant action of their feet; and owing to this process, the farmers there obtain a tenacity of soil, which enables them to grow afterwards corn crops, which their land would otherwise never yield; but in a clay soil there is too much tenacity belonging to it naturally, and, therefore, trampling, which makes it still more tenacious, directly and most decidedly injures its fertility. The extent of the injury thus occasioned, may in some measure be imagined, by considering the effect produced by the trampling of so light an animal as a sheep; and from that to calculate what effect must be produced by the weight of a cow, an animal so much heavier. The fact is, clay land poached in this way is so puddled, if I may use the expression, that every track is water-tight, which shows that the soil is completely closed against the influence of the atmosphere; the bad consequence of which is exemplified in note, p. 35.* I wish to address myself to your natural good sense, and would ask you, if the use of lime and manure, which you are all fully aware makes land of this kind loose and open, and by so doing, renders it fruitful, must not upon the same principle, the trampling of cattle, which has the opposite effect of binding and compressing the soil, render it *unfruitful*, and counteract the effects of all that lime and manure, which at so much expense and labour you have, perhaps, but a year before laid on it? I trust that, by representing this inconsistency, you will abandon the practice; and for a proof of the truth of the observations I have made, I will confidently refer you to the appearance of the soil when ploughed up from clover lea which has not been pastured, compared with that which has; or with stubble land which has been trodden down by cattle in the manner I object to.

8th. It requires a farm of fully fifty acres to give sufficient employment to a pair of horses; perhaps sixty would be nearer the truth; and therefore, if a farmer even ploughs in partnership, he ought to have twenty-five or thirty acres. I here speak of those who have no other employment for their horses than what the cultivation of the farm affords. Martin Doyle estimates the ground required to feed a horse at two acres, and the value of food and other expenses at £20 : 8 : 2d. yearly. The small farmers in the counties of Down and Antrim adopt the plan of buying a young horse, rising three or four years old, and, having used him in their

spring labour, they sell him off in May or June; and the natural improvement in the animal at that age generally leaves them a profit, besides getting their labour done for the keep. There are, however, cases where the distance of fuel, and distance of lime may make a horse necessary when it might not be otherwise. All *small* farmers ought to use the spade, for many reasons. It costs but little more, even if he has to hire assistance, and does the business better, and the crop is better. In all drill crops, also, by using the spade he may put in a quicker succession of crops, and have one coming forward as the other is ripening. In wet seasons he can dig, when he cannot plough; and its value, in turning up stiff clay lands in autumn, and exposing the soil to frost and snow is scarcely to be imagined; and in all such lands *this plan* should be pursued where no winter crop is put in.

9th. In all wet lands, and where the clay is retentive, the ridges should be narrow; which may, indeed, be almost laid down as a general rule in a climate so moist as this; but where the land is sufficiently dry, the broad ridge is preferable.

10th. No hay or straw whatever should be sold off the farm. In England this is strictly forbidden by lease, and the tenant who did so, would be supposed to have an intention of running away. If the cattle were home fed, as here recommended, all the straw the farm can be made to produce will prove little enough; and for this reason, as soon as the farmer is in circumstances to enable him to do so, it would be his interest to slate his house and outbuildings, which in the end would be found the cheapest roof, and would preserve for the use of the farm the large quantity of straw which is annually consumed in repairing the thatch.

STRIKING VINES IN POTS.

THE author of the *Domestic Gardener's Manual* once gave the opponents of pot culture the following excellent hint—he said:

The genuine advocates of pot culture, while they remain true to their principles, and are in no way daunted by the senseless clamour of their unintellectual opponents, have never pretended for one moment to impugn the well proved method of growing grapes on the rafters; nor to recommend any substitute for that method. *They merely say, that a crop of fine grapes may be produced at any season, early or late, before or after the one upon the rafters; or, if a still more definite object be contemplated, they assert that any one who wishes to experimentise, and amuse himself, may produce the finest fruit from plants growing in little more than a peck of mould, which, with every appurtenance, he may place upon his table without trouble or inconvenience.*

A Vine planted in a pot requires a certain

* See this chapter more particularly alluded to towards the conclusion of sixth chapter.

period of repose, be its age and condition what they may. Those plants which are short jointed, having the eyes prominent and numerous, upon a single rod from five to seven feet long, of well ripened wood, may be considered fruiting Vines of the ensuing spring. They should at this season be in pots of the size termed fours, placed at the foot of a wall that has a north aspect, to which each shoot ought to be lightly secured by a couple of nailed shreds. These vines, and also the smaller plants not fully prepared, should equally thus be wintered, and protected by a bed of stable litter, or fronds of fern laid over and around the pots. Nothing further need be done till the period of forcing approach, unless, indeed, it be in the event of very mild, serene, and dry weather, to give to each a supply of rain water sufficient to keep the mould a little moist, but no more; in a word, the balls should never be suffered to become arid.

The foundation stone is laid by a judicious selection of cuttings, because, as Mr. Stafford, of Wellersley, has correctly observed, *barrenness* may as readily be extended as fertility. Therefore, the cuttings ought to be taken from the proved fruit bearing shoots which are annually produced by Vines of semi-hardy, prolific constitution; such are the black Hamburgh, now the reigning favourite of the day—elect above the rest, the Frankenthal-vulgo, Frankendale, with a more richly tinted black berry; and in as respects raciness of flavour and musky *bouquet*, (if this vintage term be admissible), the true *purple constantia* of the Cape, first introduced by Speechley. The beginner should not affect an extensive assortment, he should be content with two or three fine varieties, and obtain a few dozens of fertile spurs, furnished with an inch, or half an inch, of two or three years old wood at the base, with three closely set joints of the yearling fertile wood. Suppose, then, these cuttings to be six inches long; then let each be fitted to a narrow, deep pot, so that, if the head of the cutting lie on the bottom, close to one side, the point of the young wood, an inch above the top bud, may rest upon the rim of the pot *on the opposite side*. Having thus fitted the cuttings, let five parts of two years old leaf mould be thoroughly blended with one part of the fibrous and half withered grassy portion of a turf heap, made early in the autumn from sods collected on a sheep common, or rich pasture, the earth of which is a light unctuous loam. These turves should be broken to pieces, and the raw earth sifted from them, thus, an active, open, vegetable compost, will be produced, which will be rendered still more efficient by adding a sixth of pounded oyster shells, or half that quantity of very finely crushed bones.

This prepared soil is a medium which can disappoint no one; it is truly artificial, and

quite free from any perplexing ambiguities whatever, this cannot be said of loamy composts; though light, enough of the earth attached to the grass roots remains, to give tenacity and staple to the discomposable matter of the leaf soil and fibres. In the absence of turfy sods the earth obtained from decayed couch, will be found an excellent substitute, and so it will throughout every stage of the Vine's progress. The cuttings, pots, and soil, being ready, lay an oyster shell over the hole, and half an inch of the fibrous mass from the turves, upon the bottom of each pot. Press this till it be quite solid, then place the cutting obliquely across—its heel (first pared flat) resting close upon the fibrous layer; apply the prepared soil, and put it close around every part of the cutting, bring it up so as just to cover the top bud, pressing with the fingers, to close every vacuity, and finish off, by sprinkling a quarter of an inch of fine sandy earth to produce a level surface at three-fourths of an inch below the rim. Give water sufficient to make the earth freely moist, and place the prepared pots in a cold frame, or under the protection of a shed, till the forcing season arrives. In the mean time, the physiological reader will hardly need to be informed, that the embryo eyes which exist about the point whence the younger wood emerges, are in a position to develop numerous fibres, the first and second eyes upon the bearing wood will also be stimulated with their radical appendages; and yet they are too deeply seated below the surface of the soil, to permit them, in ordinary cases, to send up a growing shoot. The *upper bud* will grow; and from a point near its base, some powerful roots will very probably emerge; but whichever of the two upper buds produce the stronger shoot, *that alone* will be preserved, to be nourished by the joint efforts of the numerous masses of absorbing feeders that will assuredly be sent forth into a bed of aliment, which never can become hard-bound or impenetrable. Of twelve cuttings of a Hamburgh, and as many of a Frankendale, not more than three or four produced sub-soil shoots; and in these cases, the failure of the uppermost eye might be assigned to actual injury.

WEEKLY JOURNAL OF GARDENING.

MARCH is such an important month for the garden, and so many people rarely touch their ground until then, that we almost look upon it as a month for getting in all kinds of crops. If our directions, therefore, are repetitions, as if we had given no previous instructions, they will be useful to a large class who are only now beginning for the summer, while others who have attended to things already will be quite aware they need not do all over again.

CELERY.—To have this good, and somewhat early, seed ought to be sown in a moderate hot

bed, or, for want of this, sow in a box, seed pan, or large pot, in good loam and decomposed dung, in the proportion of two of loam to one of dung. The pot, pan, or box, ought to be placed under protection of some kind in all the hard, cold, or extremely wet weather, and be placed in the open air when it is warm. If there be no other protection, let the pot, or other vessel it is sown in, be taken into the house in cold weather, and of nights, and be put out of doors in fine weather.

BROCCOLI.—Sow the late purple and the early sprouting for your principal crop—they are both hardy useful kinds, although the late sort stands very long in the ground. The early is, however, an excellent vegetable, coming in about Michaelmas and supplying till Christmas fresh sprouts as they are taken off for use. Let them be sown in a small bed, or patch, in a good open situation. It is a good plan to appropriate a piece of ground for sowing all the crops that require transplanting.

CARROTS.—The seed of Carrots require rubbing apart, for they hang together. The best way to do this is, to take five or six times as much dry sifted mould, or sand, and rub among it. This will so completely separate them, that they may be sown without any difficulty. Now is the time to sow for a full crop. Before you sow, you must dig, trench, and pulverise the soil, a good eighteen inches deep—level it with a rake—then sow the seed on the top evenly all over the bed, and rake the surface till the seed is covered, or draw drills, six inches apart, and sow very thin in them, and cover them very slightly. Choose a good open space.

CAULIFLOWERS.—Sow in a portion of your seed bed some seed, not too thick, and rake them into the ground. Plant out the plants which have been kept through the winter into a piece of open ground which has been well dunged, and dug or trenched, and left in ridges during part of the winter. The ridges have merely to be levelled, and the plants may be inserted in rows, twelve inches apart in the row, and the rows two feet asunder. Let them be well watered at the time of planting.

LETTUCE.—Sow both cos and cabbage kinds—some recommend them to be sown among carrots, onions, or radishes. It may be necessary when you are short of ground, but it is both a wasteful and slovenly mode of gardening. It is far better to sow in your seed bed as much as you think may be wanted, or sow thinly in a plot of ground on purpose for them. From this plot you may take up some for planting out, as soon as they are large enough, leaving as many at proper distances as will come to maturity there.

Sow, if not already done, Turnips, Spinach, Leeks, Parsley, Radishes, Peas, and Beans, (for succession crops) Parsnips, Small Sal-

lad, Corn Salad, &c., as already directed. In short, this is the period for reading the directions of the last few weeks, and doing what has not been done.

A FEW MORE PRETTY ANNUALS.

CLARKIA ELEGANS, is a curious flower. The form of an ornamented cross, an inch or more across, perfectly hardy, and a foot and a half high. The colours are lilac, rose, purple, and there is a white variety. In bloom from May till frost.

HIBISCUS AFRICANUS.—Showy plants, eighteen inches to two feet high, with abundant coarse, cup-like flowers, very gay in large borders. Some rosy purple, others striped purple, and white; blooms July and August.

CANDY TUFT.—Dwarf showy plant, not exceeding one foot in height, with trusses of small white or purple flowers; blooming from July to September, and showy all the time.

ESCHSCHOLTZIA.—A very showy yellow and bright orange flower, rather cup-like form, and dwarf habit, not exceeding one foot in height. This is by some called a perennial, but it will bloom the first season, although it is best sown in the autumn, like many other annuals, which, nevertheless stand the winter well; blooms from June to September.

CALENDULA PLUVIALIS, or Cape Marigold. —Showy white and purple Marigold, not more than one foot high, and blooms in July and August.

XERANTHEMUM.—Beautiful star-like, flowers, upon a rather coarse looking plant, but the chief merit of the flowers is, that they are what is called everlasting, that is, scaly and dry, so as to form winter nosegays. There are in some of the catalogues, purple, white, yellow and striped.

CAMPANULA LOBEL.—Small blue bell flower plant, one foot high, blooms in July and August, is now called the new Venus's Looking Glass.

VENUS'S LOOKING-GLASS.—The name of this well known annual has, in obedience to modern humbug, been changed to *Prismatocarpus Speculum* by L'Heritier, and to *Specularia Speculum* by De Candolle. It is a small blue flower, on a dwarf plant, not a foot high, and blooms June, July, and August.

VIRGINIAN STOCK.—A dwarf small plant, with flowers like little windmills. Blooms when six inches high, and never reaches a foot. There are several shades of red, and there are white flowers, and they last in bloom May, June, and July.

CONVOLVULUS MAJOR.—A climbing plant, like a scarlet bean, but bearing purple, rosy, white, and variously striped funnel-shaped flowers, nearly two inches across, with white centres, and blooming from June till frost. They can be made to run up any form of trellis, or pole, or the trunk of a tree.

CONVOLVULUS MINOR.—A dwarf plant, not more than eighteen inches high, and bearing similar, but smaller flowers; both kinds close their flowers in the evening, and on very dark and rainy days.

LOBELIA GRACILIS.—A dwarf plant, not a foot high, with abundance of small blue flowers; blooming from July till the frost.

LYCHNESS CÆLI ROSA.—A dwarf plant, not more than one foot high, with flesh-coloured flowers; blooming in July and August; and *Lychness Læta* is not more than half the height, and the same colour; blooming at the same time.

PHLOX DRUMMONDII.—One of the most beautiful of the Phloxes. The plant is dwarf, not much exceeding a foot in height, and has trusses of bloom as close as those of a Sweet William, but infinitely more beautiful. The colours are very much diversified, from white to dark purple, and we have seen advertised a scarlet. Whether this is like the scarlet *Lamburnum*, of which so much was said, and which proved a dirty purple, we know not. *Phlox Drummondii* blooms July, August, and September.

RHODANTHE MANGLEZII.—An elegant, delicate little plant, with star-like flowers, very shiny and scaly in substance, like the *Xeranthemum*. Yellow disk, and rose-coloured petals, fitted most for pot culture, but pretty out of doors if first raised in heat; blooms July, August, and September.

SAPONARIA CALABRICA.—Small plants, nine inches high at the most, with trusses of pretty pink flowers, like those of the *Lychnesses*, and blooming in July, August, and September.

SCHYZANTHUS PINNATUS.—A branching plant, eighteen inches to two feet high, with singular shaped flowers in abundance, growing at the end of all the shoots, and among the foliage. There are three colours in almost all the flowers, even in those which are nearly white; most of them have lilac, purple, and yellow in them. They bloom July and August. *Schyzanthus Humilis* is more dwarf, not more than a foot high, and there are other varieties.

A FEW WORDS BY GEO. GLENNY, F.H.S.

It seems that we are too far engaged in a particular department of this work to be got rid of, or to be able to get rid of the duties; and yet our writings are subject to rejection, if the "powers that be," fancy they are too strong; so that much against our will we are to be very quiet about many things, which, if we had our own way, would make us a little noisy. Those therefore who look for the high seasoning which characterized the *Gazette* in our day will be disappointed. Judges may do injustice by wholesale, the Gardener may be trampled on, Societies may commit peccadillos by the dozen, bad

flowers may be sold as good ones, Kew Gardens may be overrun again with filth and dirt, the Horticultural stove plants may be infested with vermin, the wages of Gardeners may be kept down or even lowered, Impostors may flourish under the auspices of Garden Newspapers, the trade monopoly of public bodies who are paid for plants and seeds by the year's subscription, instead of by a yearly bill, may go on unmolested, practical men may be hunted out of their places and replaced by fine gentlemen, and it must not raise our steam above a four pound pressure, or our thermometer above moderate: that is to say, we must remonstrate politely against things which we should handle so as to spoil a man's dreams, and complain in pathos instead of knocking down the offender with thunder. In short, we must introduce censure (as the Homeopathic doctors do medicine) in small quantities instead of in powerful doses. All this may be very well for *The Gardener and Practical Florist*, but it is by no means comfortable for us, who feel almost running over with indignation; many an article have we written at fever heat, but it has been politely returned; many an arrow have we let fly with a sure aim at some provoking object, and Mr. Editor must poke his shield before it to bring it to the ground. Many a time have we intended to place in this work a paper which we thought an ornament to the pages it would occupy, when it has been met by Mr. Editor with the most heartless indifference and this ominous speech, "Its all very well, Mr. Glenny, but it won't do here." In short, it is necessary to make whatever is meant for *The Gardener* polite as well as true, and, as truth is often too rough to be polite, we are obliged to keep even some of that out. One thing is quite certain, and that is, that unless we can get hold of a newspaper or some other safety valve, we shall burst; and then, away goes all chance of the Gardening world hearing or seeing the truth in any shape. Be not surprised then ladies and gentlemen readers of *The Gardener and Practical Florist*, to find your humble servant one of the most polite of the contributors—not by nature, but by obligation; our articles shall be made to pattern like one of Stultz's coats, they shall fit like the skin of a ripe cherry, and be as smooth; not because we think they ought to be so, but because if they are not so, they will not appear in *The Gardener*. We hope however to see the day when we shall be able to write for ourselves, and for our honest rough friends, as well as for the more quiet and peaceable other people; when, to take a simile out of the renowned Joseph Miller, we shall not be obliged to hit a dog with the butt end of a halberd, instead of killing him with the point, until he runs at us tail foremost, instead of with his mouth open; that will not be until we have the sole control of some newspaper. We desire none so much as our own dear—no, our cheap—

Gardener's Gazette, for it was worth five times its cost; when, having vent for our bluntness we shall in this be polite by inclination instead of because we are forced. We may however, assure the readers of one thing which affects them *The Gardener* has engaged all we know about flowers, their cultivation, and their properties and if we have fifty newspapers they will not turn us aside from a determination not made without much previous thought, that *The Gardener* shall command this, whatever becomes of the rest, and that it shall be a wise man as well as a good one; who shall gainsay what we once commit to paper in this work.

VARIETIES OF FLOWERS.

THERE are now advertized by some of the seedsmen no less a number than—

- 32 varieties of China Aster
- 12 ditto of Quilled ditto
- 8 ditto of Pyramidal ditto
- 16 ditto of German Dwarf ditto
- 60 ditto of German Stock
- 25 ditto of Dwarf ditto
- 12 ditto of Branching ditto
- 12 ditto of Wallflower-leaved ditto
- 15 ditto of Autumnal ditto
- 16 ditto of Winter ditto or Biennial ditto
- 10 ditto of German Wallflowers
- 12 ditto of German Dwarf Larkspur
- 8 ditto of ditto tall ditto
- 20 ditto of Double Poppy
- 16 ditto of Cockscomb
- 16 ditto of Double Balsam
- 12 ditto of African and French Marigold
- 12 ditto of Salpiglossis
- 30 ditto of Double Hollyhock
- 24 ditto of Zinnia Elegans

Most of which subjects were grown only as mixtures, until the Germans set us the example of keeping sorts distinct and noticing the peculiarities which present themselves in large masses of plants. We have no doubt that those subjects which come most constant, would on examining a vast number, present some novelty which, selected from the mass, would be the origin of a new race. There is not half the pains taken that there should be with things produced from seed. In a field of peas, if the very first that opened its flowers were marked and all its produce saved, there is no knowing whether it might not prove a new kind, but, if these things are not noticed, a new and valuable race goes to market with the other seed, and is eaten or destroyed, whereas there is no knowing how many truly valuable subjects might have been saved, had attention been paid to those peculiarities which are valuable, and each new subject had been submitted to a fair trial

SIR JOHN MURRAY ON CHEMICAL FERTILIZING.

WE have been favoured with a pamphlet which to us opens a new field of science; and that our readers may receive the earliest impression of its importance, we simply inform them that these fertilizers are artificial manures, so contrived, as to furnish particular crops with precisely the kind of nourishment they want, and that the pamphlet contains remarks on their application, and their chemical powers. The ingenious method by which the author familiarises the reader with cause and effect is not the least valuable characteristic; and in showing how various plants take up various products he relates one or two remarkable cases, to which we call the attention of florists. At a public dinner, after Sir John Murray's health was drank with enthusiasm, he returned thanks in a good, sound, but short lecture, for such we must call it, and the parts we select here we request our readers to notice. There is not a line that we can remove without injury to the author, therefore do we recommend a careful perusal; and when they find that by chemical means they may dissolve glass, which is taken up by corn in large quantities, and that they can change the colour of a flower, they will have been well repaid for the attention they have bestowed upon this little pamphlet. There is practice as well as theory in all the author writes, and here we must leave him to speak for himself.

CHEMISTRY AND VEGETATION.

"Many persons may think it odd that I, a professional man, should turn my attention to chemical husbandry; but when we consider that all plants, "and every herb that sips the dew," are living beings, subject to the laws of life, of circulation, respiration, and nutrition, liable, like animals, to diseases and remedies, and that every operation of manures, and of lands and soils, are but processes effecting chemical actions and reactions—when we reflect upon these great truths, we need not wonder that several physicians here present endeavour to remedy and improve the defects of lands and crops, but, on the contrary, we are surprised that thousands have not turned attention to impart to agriculture some of those advantages by which chemistry has new-modelled and enriched every other art of life, and, in particular, exalted the art of curing the disorders of animals, which are so nearly related to vegetables in many respects, and formed almost exactly of the same elements and ingredients.

"The air around us furnishes two of the four elementary bodies of which plants and animals consist; these are oxygen, that pure air which renews, refines, and reddens our blood, without which we should immediately die, and deprived of which these candles would be extinguished.

The other element furnished from our atmosphere is nitrogen, which is a constituent of all animals, and in smaller proportions of all vegetables, but particularly of their seeds. Water furnishes a third element, hydrogen, a light air, which is that used to inflate balloons, owing to its levity; heavy water is made of two light airs, eight parts of oxygen to one of hydrogen; these exact proportions form more than one third part of every plant, root, or seed, ever used by man or beast.

"In order to be plainer, or more easily understood by the younger members of the society, I will take my illustrations from the substances before us. The ocean of air around gives us oxygen and nitrogen; this water affords us hydrogen. The fourth element of plants and animals can be made out of the table before you; on burning a piece of wood, two of its elements are dissipated, or set free, and the third, viz., charcoal, remains, which is carbon, or coal. Now, this carbon constitutes one half of every dry plant, wood, or vegetable in nature. As every crop takes away a vast deal of carbon out of the land, a good supply of that great element ought to be given to the succeeding plants every year; and this is one of the principal objects of all your farm yard and stable supplies; and observe, in any endeavours I may use to obtain for lands the two greatest constituents of crops, viz., carbon and oxygen, I do not mean that you are to relax your own efforts to obtain more and more of your ordinary resources, or that you can neglect draining, and all other modes of improving your lands; on the contrary, judiciously draining your wet, gorged grounds, is as beneficial as drains, by setons, are to carry off congestions and bad humours from disordered animals. In recommending chemical sources for supplying carbon, oxygen, and other food for crops, I do not mean to supplant the old, but rather to put three or four additional dishes on the great table of our land, in order to make up what is notoriously deficient, and to enable the poor man, far from cities, to draw at one load what will fertilize an acre, as well, at least, as he now does with many loads of ordinary manure.

"As the fine spongy rootlets of plants cannot imbibe carbon or charcoal, however finely levigated, all-bountiful nature has dissolved this carbon in one of the other elements, the oxygen. Six pounds of this carbon unites with sixteen pounds of oxygen, and both form twenty-two pounds of an air, called fixed air, because it is fixed in marble and limestone. It is also called carbonic acid, because it is made from carbon or charcoal; now this fixed air is soluble in water, and is the same that escapes from brisk ale or porter. Its solubility in the moisture of soils renders the carbon capable of entering the fine rootlets of crops, and of ascending by the sap-cells, or blood-vessels, to every leaf and twig.

Here, one of the most useful, as it is one of the most beautiful provisions of Providence, is in eternal operation—the light of the sun aids the vital action of the leaves to decompose the carbonic acid; it is again resolved into its original elements, carbon and oxygen; the plants retain the carbon as their solid food, and emit, at every leaf, the oxygen, to purify the air, and, by the fragrant breath of herbs, trees, and flowers, to render our atmosphere pure and fit for us to breathe.—Now, my lord and gentlemen, as it is unfortunately too true that millions of acres are in a semi-cultivated condition in this country, and that the crops in general are in a half-starved state, and as half-starved crops will half-starve their unfortunate owners, it becomes our bounden duty to aid the husbandman to obtain a reasonable supply of those four essential elements, or articles of nutrition for his corn, grass, and roots. It is a law of nature, that if only one item of the necessary constituents of plants be deficient, the crops will not come to perfection. Land, otherwise good, will be barren, if even one of the useful ingredients of vegetables be wanting. It being obvious that the country has not half aliment for crops, from the animal and vegetable kingdom, we must resort to the mineral kingdom to supply the defect. With this view I have succeeded in obtaining from mineral materials a vast magazine of the two principal articles upon which crops must in any way be sustained. These two great principal ingredients of nutrition, carbon and oxygen, are the same which you are endeavouring to impart to soils by those fermenting materials which your farm-yards now so scantily furnish. Sir Humphrey Davy was so well convinced of the all-important practice of providing plants with carbon and oxygen, by means of carbonic acid, that he relates in his lectures a practical proof, as follows:—He filled a retort with the fermenting litter and manure of a stable, and found that the products arising were chiefly carbonic acid. This air he introduced under a grass border, by a tube conveyed from his retort; the roots soon absorbed the gas from the soil, and the grass became green and succulent.

"As this method of furnishing fixed air is not applicable to general use, I contrived cheap and efficient means of liberating or generating this gas, under and within the ground. When slowly and gradually evolved under the mould it impregnates the soil with carbon and oxygen, imbues the moisture of the soil with nutritious properties, and forms a magazine of fixed air within the land, around the roots of plants. It would be too tedious to detain you, my lord and gentlemen, with the details of the various steps by which I succeeded in accomplishing these great objects on a practical scale. The mineral acids, by which I set free the fixed air from alkaline materials, were so dear, dangerous, and corrosive, that I contrived new methods to render

them cheap, portable, and safe to carry by carts or canals. I effected means of converting the liquid acids into a dry, powdery consistence, free from danger or risk in using them. When a handful of these dried or solid acids is scattered in stables or cow-sheds, the volatile alkali (which sometimes is so pungent as to blind horses), is fixed and consolidated in the composts and drainings. Thus nourishing saline combinations are obtained, which otherwise fly off and are lost. In like manner these dry acids act upon lands, abstracting volatile alkali from the air, and also rendering lime and magnesia mild and soluble in soils, by the medium of carbonic acid set free in the marl or mould. The alkaline materials, on the contrary, are carbonates and super-carbonates; and are valuable for correcting sour or acid lands. When the dry acids and alkalies are mixed together in heaps of clay or mould in the field, they impart a store of carbon and oxygen to these heaps, which thus become enriching composts to be spread on the land with the seed, or before or after it is sown or planted. Every farmer may thus make his middens in every square perch of the field where they are to be used; and thus save the time and labour of men and horses, drawing common manure to a great distance in the hurried seasons of the year. There are several other ingredients essential to good farm produce. This mineral or rock which I send round for your inspection is native, or fossil bone earth, and is added to the fertilizers, to supply the phosphates, which are essential to grass, corn, and potato crops. It is curious, that without phosphates of magnesia we could not raise good potatoes; without phosphate and carbonate of lime, eggs would be without shells, and our bones would be only ricketty gristles; phosphate of lime is essential to milk, and to all good or perfect grain.

"Another valuable addition to our fertilizers is silica, or flint, in the soluble form, in which state alone it is fit to enter the roots of corn, grass and cane reeds. Silica or flint is essential to these crops. To render this subject more familiar, I may mention that you can convert this glass into soluble flint by fusing it with alkali; you can apply this fluid flint to growing corn; and again, if you burn the straw of that corn, you may recover the flint, and re-construct a similar goblet from the straw and corn to which you had applied it. In truth, unless the straw be fortified by flint, the stalk is soft, spongy, and liable to fungus or mildew. Many other proofs might be added to demonstrate the importance of chemical aids to all plants, fruits, and flowers.—Not only may the quality, texture, and produce of crops be vastly increased, but even their colours and odours may be altered. I beg leave to relate a single trial to prove this:—Two white hyacinths were sent to me in flower-pots last spring; the mould of one was

occasionally sprinkled with water for a month, the other was sprinkled at the same time with an equal quantity of water, containing a few drops of a solution of nitro-muriate of tin, so weak as merely to taste the water. When the plant was saturated in all its interior structure with this mordant liquor, I then moistened the mould daily with an infusion of cochineal. This dye was soon absorbed by the roots of the hyacinth, and in a few weeks its flowers were converted into a deep crimson. I sent those two hyacinths to be examined by the Royal Agricultural Society in Sackville Steet. I am aware that plants have been dyed by simple colouring application; but I believe this to be the first time that a dye was fixed in the interior of flowers by a mordant liquor introduced into the circulation. By my artificial process of fastening the colours in the living texture of the plant, the colour does not fade; on the contrary the dyes fixed by mordant liquors became deeper and deeper in the sun, and, in the language of the dyer, might be warranted to wash.—It is remarkable that the plant treated with the mordant liquor and dye, increased in succulence and size, put out two new lateral stems, and two new tufts of deep crimson flowers; whilst the watered plant remained without any apparent increase or alteration. My lord, I lament trespassing on such long and flattering attention; but I am anxious to glance at several outlines of chemical agriculture, in the presence of a nobleman upon whose scientific and enlightened career the eyes of all Europe are now turned. I must conclude; and beg to remind my friends, the farmers, that as they had heretofore plenty of verbal advices and written directions, it is my wish now to furnish them with *things* not *words*—to put into their hands the materials themselves, as well as their names; and to enable them during this wheat season, to prepare an Irish acre of their land at an expense not exceeding £2. This reduction in expense is owing to the immense saving resulting from the large scale of our operations, when contrasted with the small experiments at first attempted, and which could not succeed, owing to the scanty manner in which the trials were used. The chemical and saline materials are now manufactured in an extensive manner, affording four times as much for the land as was furnished to it last year. The wheat and grass Fertilizer contains every constituent item required for the perfection of wheat and grass; and it is hoped that their use will confer a benefit on my country".

We have only given one of many equally valuable addresses on the subject of chemical application to the ground, and we think our floral brethren will begin to look about them, now that the secret of changing the colour of flowers has been fairly discovered. How long will a blue dahlia be a *rara avis* if this theory be extended?

Encyclopædia of Flowers.

A COMPLETE TREATISE ON THE CULTURE OF THE FUCHSIA.

SCARCELY any flower that we remember to have noticed—not excepting even the Dahlia or the Pansey—has received so many additions to its varieties, and even its species, as known in this country, as the Fuchsia. It is comparatively but a few years since two or three was the extent—nay, in the time of Miller, there was but one, and as it bears immediately upon the subject, we give his account of it:—

“FUCHSIA (*Triphylla*.) Lin. Sp. Plant, 1191. *Three-leaved Fuchsia*. Fuchsia triphylla, flore coccineo. Plum. Nov. Gen. *Three-leaved Fuchsia with a scarlet flower*.

“This plant is a native in the warmest parts of America; it was discovered by Father Plumier, in some of the French islands in America, and was since found by the late Dr. William Houstoun, at Carthage, in New Spain, from whence he sent the seeds into England.

“This is propagated by seeds, which must be sown in pots filled with rich light earth, and plunged into a hot-bed of tanners’ bark, and treated in the same way as other seeds from warm countries. In about a month or six weeks after the seeds are sown, the plants will begin to appear, when they should be carefully cleared from weeds, and frequently refreshed with water to promote their growth; and when they are about two inches high, they should be shaken out of the pot, and separated carefully; then plant each into a small pot filled with light rich earth, and plunge them again into a hotbed of tanners’ bark, being careful to screen them from the sun until they have taken new root; after which time they must have fresh air admitted to them every day in proportion to the warm season, and should be frequently watered. As the season advances and becomes warm, the glasses of the hotbed should be raised higher, to admit a greater share of air to the plants, to prevent their drawing up weak; and when the plants are grown so tall as to reach the glasses, they should be removed into the bark-stove, and plunged into the tan-bed. In winter these plants require to be kept very warm, and at that season they must not have much water, but in summer it must be often repeated.

“These plants are too tender to thrive in the open air in this country, even in the hottest part of the year; therefore they should constantly remain in the stove, observing to let in a large share of fresh air in summer, but in winter they must be kept warm; with this management the plants will produce their flowers, and make a beautiful appearance in the stove, amongst other tender exotic plants.”

It would be difficult now to give a complete

list, but it has been related that Mr. Kennedy, of the firm of Lee and Kennedy, was travelling in the East—not farther, we believe, than East Smithfield—he saw a plant which attracted his attention, and endeavoured to learn of the old lady who owned it where it came from, and what she wanted for it. He learned very little about the former, and as to the latter, the good woman said she would not part from it for the whole world, because her dear son brought it home for her from abroad, and it was the only thing he left her. Mr. Kennedy, however, wishing to make an impression on the old lady’s heart, turned out of his pocket all the gold he had got; something like eighty guineas proved beyond the mother’s ideas of the whole world, and he trudged away with the only thing her dear son had left her. This was one of the best Fuchsias known for years; and many a thousand pounds have been turned in the course of its propagation and sale. We have heard the story told many ways; but all agree in one or two leading points—first, that one of the old firm of Lee and Kennedy met with the plant in the hands of a female, whose son brought it from abroad, and who had no more idea of its value than she had of the man in the moon. Other species were added by collectors, and several very distinct and beautiful kinds raised are in general cultivation. The most beautiful of these, without any exception, at the time, was *Globosa*, a dwarf, shrubby, and drooping plant, with roundish flowers in great abundance, and capable of being bloomed even in thumb pots: some of the varieties had very long drooping flowers, others had very small ones; and the saving and sowing of seeds in this country, gave rise to many very beautiful additions. Not many years since, a foreigner came over with a magnificent collection of Cacti, orchidaceous plants, and miscellaneous subjects, which few persons had confidence in, because he was almost a stranger. He talked of a new Fuchsia, with long blooms, broad leaves, and other singularities; but nobody seemed to fancy his described novelties, however content they might be to give his price for those things, which spoke for themselves. A curious coincidence once more made the house of Lee the medium of introducing a new Fuchsia, for it seems this foreigner, who was perhaps not altogether unknown to the parties, left them a number of subjects when he departed from London, and among them the new Fuchsia (*Fulgens*). This was distributed at a guinea per plant, and it has led to a thousand other varieties. The over-cunning gentlemen botanists, of course doubted

it was *Fuchsia*, and before they had quite satisfied their scruples, seedlings were produced, by crosses, between *Fulgens* and *Globosa*, and half a dozen others, proving incontestibly that they were the same family; and the only thing to be regretted was, that these hybrids, or crosses, were produced by many persons at the same time: and varieties of almost the same character were named after all the Tomkins's, Pipkins's, Hopkins's, Simpkins's, the Grants, Clarks, Smiths, Browns, Jones's, and Robinsons, through the whole country. "It never rains but it pours," says the old saw, and the very seeds saved from the new guinea plants were soon sold in shilling packets, to breed a new race of similar kinds, with nothing novel but the names, which depended chiefly on the taste of the growers. If we venture, however, to describe a few of those we think really distinct, and worth buying to cultivate, we risk doing an injustice to those we have not seen; and all we can do in such a case is to promise, that the instant we receive specimens, or see plants of any, worth adding, we shall cheerfully hail them, and add them to the collections of all who take our recommendations. There is no essential difference in the mode of culture to be applied to the different varieties, and we can only vary in our mode of training, which depends merely on the habit of the plant.

PROPAGATION FROM CUTTINGS.

They all strike so freely from cuttings, that if they are taken off the old plant in spring, summer, autumn, or winter, they never fail, if they have ordinary attention. In winter and spring they are bare of leaves; and if cuttings of only two inches in length be stuck into a pot, close together, no matter what soil, and be kept in a warm part of the greenhouse, moderately moist, they will strike and grow in spite of all obstacles. If from May to November, cuttings be placed in the open border, under a hand-glass, and properly watered, not one in fifty will miss rooting. If from plants grown even in a dwelling-house, slips be dragged off and stuck against the side of the pot, they will rarely fail to make good root in a short time—nay, we once had a branch, of about six inches in length, of *Riccartoni*, one of our favourites, broken off by accident in repotting and planting, and lost it: three months after it was found buried in the heap of soil we had been potting from, and every eye, the whole length of the stem, had pushed two inches or more, and reached the surface, and had formed a sort of calyx, or incipient root, at the bottom of each shoot. We divided the branch into as many pieces as there were shoots, and every one made a good plant. We mention this, to show that there is in reality neither art nor mystery in striking these elegant plants, and that although they may be hastened by judicious attention, and be brought to perfection, sooner by one means, than another,

there is every encouragement for a novice to take this beautiful tribe of plants under his care, and every prospect of treating them successfully. The quickest method of striking them is, to take cuttings, two inches and a half long, cut off clean at the bottom, close under the leaves, between May and August, the earlier the better. Take off the lower leaves to make the stem bare for one inch from the bottom. Fill a seed pan, or pot, with light rich soil, say loam, dung, and sand, of equal quantities, up to within an inch of the top rim, knock the pot on the table to settle it down a little, but do not ram it too close. Fill up the rest with clean silver sand to the top, get a glass, whether it be a proper one made for gardening, or a broken tumbler, matters but little, but it must be less than the pot, so as to be easily pressed down close to the sand within the rim. Water the sand, and, while wet, make a mark with the glass, to show what room you may occupy with the cuttings. Now put in the cuttings, which will easily penetrate the sand, as close as they can well be packed, say not half an inch apart, pressing them down to reach the soil, but not to go into it. When you have filled it ready to put on the glass, water them gently to wash the sand down close round them, put on the glass, and put them any where in the greenhouse, out of the way of the sun, or in a stove in the coolest part, or, for want of any such accommodation, in the window of the dwelling house, taking care that the inside of the glass is wiped every morning, and that the sun is kept off the few hottest hours of the day. Now, whether there be one pot or fifty, whether they be large or small, or seed pans be used instead of pots, the only thing to take care of is, that they are never allowed to be dry, that the hand glass, or other glass, is small enough to go close to the sand within the rim, and that they are wiped inside every twenty-four hours. The time they take to strike depends entirely on their situation, but in a stove, or propagating house, or a slight hot bed, with bottom heat, they will soon root and grow—in a greenhouse or dwelling-house they will take considerably longer time—but when they begin to grow well, you may conclude they are rooting, or have rooted, and you may examine by disturbing one that is the most easily got at. If you find it is well rooted, you may prepare small sized pots, sixty to the cast, which are not more than three inches across. Use the compost recommended for almost every plant, and which almost every plant will grow in—namely, loam, formed of rotted turf, one barrow full, decomposed dung from a melon or cucumber frame, and peat mould, broken up, and rubbed through a coarse sieve, half a barrow full each. Work these well together, and sift them afterwards through a coarse sieve, put a piece of pot sherd, called in gardening a crock, in each, over the hole, fill up the pots with the compost,

and, having them already, strike the cutting pot sideways three or four times to loosen the mould a little, and you will easily turn out the ball, which will fall to pieces, and easily disengage the cuttings, without damaging the roots. Plant one in each pot the same depth it was in the sand, that is to say, up to the bottom leaves, water them carefully, and keep them in the shade until they are a little established. They must never be suffered to get dry, and if you have them in a stove, or a slight hot bed, they will soon make rapid growth; if in a greenhouse, or a dwelling-house, they will take much longer time, but they will not be long filling the pots with root; when they must be shifted into large sized sixties, with the same compost to fill up with, and after staying in-doors a few days, they may be placed out of doors on gravel, stone, ashes, or some other floor impervious to worms, and into which they ought not to be allowed to root. Here they may be continued until you begin to grow them into specimens.

PROPAGATING FROM THE ROOT.

When an old stool of the Fuchsia is taken from the ground many shoots will be found to have grown direct from the root, and if pulled off, will come with portions of root to them; these make plants at once, without striking, and may be cut down to two inches in height, and planted at once in sixty-sized pots. This habit of throwing up shoots from the root has led to an encouragement of them, by earthing up the plants in the open ground, and for the sorts usually grown in the open air it is a very good plan to dig them up in the autumn, and pull the root into pieces, pruning both root and shoot tolerably close, and potting them as directed.

PROPAGATING BY SHOOTS, AS DAHLIAS.

This only applies to the Fuchsia Fulgens, and those of the same habit, such as *Corymbiflora*, and some others. These are among the most recent importations, have very long flowers, the shape of an old coach guard's horn, have tuberous roots like a dahlia, and require much the same treatment, except that when the plants have done growing, and are to rest for the winter, they may be left in the pot, kept without water, in a cool part of the greenhouse, until the beginning of January or February, when the earth may be removed from the surface until the crown of the root is exposed, the plant be cut down to within an inch of it, and then it may be watered, and put into a hotbed or stove, or for want of any thing better, a warm room in the warmest part of the greenhouse. It is no use to pretend that any thing is so good as the hothouse, or hot dung bed—such as is used for cucumbers, or melons, dahlias, &c. As soon as shoots are two inches long, or thereabouts, they must be taken off close under a joint, and be struck

in the hot bed, with a glass over them, half a dozen or a dozen round the edge of a pot, which must be plunged up to the rim inside a larger pot, that a striking glass may cover them and the pot they are in, and touch, or rather press, the soil which is outside it to keep the external air away. Other shoots will come from the root, to be in turn treated the same way. The glass must be wiped daily, and when these shoots are struck they may be potted into sixty-sized pots, watered, and may then be put in the greenhouse, and covered with a hand-glass a few days, and be left to grow, like all the others, until the pots are filled with roots.

GROWTH OF PLANTS INTO SPECIMENS.

Presuming that you want the plants to bloom small you have only to watch them well that they do not want water, without having it, and do not shift them until they have pretty well matted round the inside of the pot, when they may have a shift to other pots a very little larger, and the sifted mould or soil must be carefully shaken or poked with a small stick down between the matted roots and the edge. They will, for the most part, and especially the *Globosa* and its varieties, soon come into flower, but if they are wanted to grow into specimens, they must be kept warmer, be constantly well watered, shifted as soon as the roots reach the sides of the pot, which can be seen by occasionally turning them out, and when bloom buds appear they must be taken off. Although the warm weather may come, and render artificial heat useless, they must still be kept under glass, and shaded from the violent heat of the sun, shifting from one sized pot to another as fast as the roots reach the sides, and grow freely, and, removing the bloom buds as fast as they appear, must be continued, until they come altogether.

The great aim of the cultivator, who is growing a specimen plant, should be to keep it moving, never to let it suffer for want of room in the pot, or for water. When any of the branches appear to take the lead, and grow more vigorously than the rest, such branches should be shortened to such a length as to allow the new shoots, which will immediately proceed from it, to about fill the vacancy the shortening makes: for instance, suppose the side shoots, half way up, grew six inches outwards, but that one more vigorous than the rest pushed out a foot, and was much stronger. If the place were left so it would still grow larger in proportion, and throw the plant altogether into an ugly form. If it were cut into the same length as the rest, it would make the plant a better form; but being thicker and stronger than the rest, it would send out vigorous shoots that would still throw the plant on one side, and to keep always cutting that part in, would show a number of stumps, instead of the light and delicate ends of branches. But if you cut the branch at first to half the

length of the others, it will soon fill up the vacancy with lighter branches. It is, however, still better to commence very early to grow your plants in shape. Any of the tall growing kinds, with which we have been long familiar, grow best of a pyramidal form. The *Globosa* varieties are more drooping; they may be grown to droop all round the pot, or they may be trained to form an upright stem and a drooping head; others prefer a bushy plant, without any distinct feature. The whole of the *Fuchsias*, however, look best when grown according to the nature of the plant, merely assisted by the cultivation in its progress. Let us set out with a plant of each sort in one of the 60-sized pots to be grown, as they would naturally grow, and helping them in the development of their natural beauties, merely by removing any kind of distortion, or assisting them now and then with a little "gentle violence." The plants are generally, and particularly while they are dear, very scrubby little concerns, we should give them gentle heat to begin with; and when the pots were full of root—which would soon be the case—we should remove them into those of a size larger, and we should pinch out the eye or end bud, of any side shoot that we found growing too vigorously for the rest of the plant, unless it were the centre or upward shoot, which we should of course let grow as fast as it might; but any side branch thus stopped by pinching out the end bud, would throw out lateral shoots, and fill up, or help to fill up, the bushy character of the plant; so also, if it were one of the drooping kinds, the great object would be to have all the drooping branches round the pot of something like the same length. So that as soon as any branch gets too far advanced to be uniform with the rest, check it by this means as soon as you can discover it. But suppose these little shabby plants grow all on one side, or ugly, and there seems no disposition to grow handsomer, cut them down at once, leaving only the bottom eyes of any branch, or cut down the plant, even in the middle, to the part where there are branches, and cut these branches in to the two bottom eyes. There will be numerous shoots come from the collection of stumps, and these, while young, should be looked to; those which cross each other require that one of the two should be removed: there should be none remain but such as point outwards or upwards in their growth, and a proper number of these should be left to grow, and all others taken off close to the bottom. The plant may then go through all its shiftings and stoppings, until it form a handsome specimen. Suppose, which is often the case, a plant consist of only one upright shoot, and at the bottom there be only two branches, one outwards, on one side, and one on the other. These two shoots must be shortened to the two bottom eyes, which will push out right and left, and assist to make four bottom branches

instead of two; and when these four have been cut back in the same way, there will be eight, which will most likely make the bottom thick enough; and in the mean time the side shoots that come out up the stem must be prevented from getting too long for the bottom one, by stopping or pinching out the end bud, or heart, which is the only means of lengthening the branch has.

FROM SEED.

The seed of the *Fuchsia* is contained in a purple berry, full of pulp and juice. The seeds will keep some time; but if you desire to sow them directly they are ripe—and it is always best to do so if you have the convenience of stove and greenhouse—you may bruise the berries, and, wash the pulp, when the seeds are easily collected and dried; or you may mix up sand with the pulp in sufficient quantity to absorb the moisture, and rub the mass together to separate the seeds, when the sand may be sprinkled with the seeds over the surface of a pot or seed pan or pans, according to the quantity, and cover it slightly with the earth; it may, however, be recommended as the best plan for small quantities to clean the seeds by washing, when you are able to see them as you sow them, they ought not to be too thick, for you may safely calculate on almost every seed vegetating. The pans may be set in the stove, in the coolest part, or in the greenhouse; but as the seeds ripen in the autumn generally, it is better to save the berries till the spring, if you have not proper greenhouse and stove, because a very slight frost, or a very little damp, would destroy young seedlings in winter time. When the seeds have come up, and are large enough to handle well, they should be planted single in thumb pots, which are the smallest sized pots in general use, and placed in the stove again, or in a slight hotbed, for they should be kept growing fast until they are established. They may then be placed in the greenhouse, first under a hand-glass, for two or three days, and afterwards the glass may be taken away. The plants are to be shifted into larger pots as they fill their old ones with roots, and be kept growing, without any care as to form, until the bloom is seen. It will be then soon ascertained whether they have among them any new varieties worth keeping, and the nature of the growth or habit of the plant, when not interfered with, has a good deal to do with its value. When you find one that pleases you, that is when you think one good enough for a new name, let it grow as fast as it will, and keep taking cuttings from it, and striking them as fast as they grow. The mother plant will always make a good bushy specimen when done with for increase.

If a plant be required very dwarf, the end bud should be taken out before the plant is two inches high from the cutting. It will then throw out lateral or side shoots, and before these are two

inches long they should be treated the same way, until the plant has assumed the kind of growth you require. If it is wanted as a standard, the side shoots must be rubbed off half the length of the stem, and must be continued to be pruned off half way up, until the top of the main stem is as high as you wish the top of the standard to be, when you may prune off the lower branches until you have formed the stem clean and clear from branches, as high up as you require it, but if you were to trim off the lower branches more than half way, at any time while it is growing to the height you want it, you would greatly retard its growth. It is the head part that would grow; and if you trimmed it half way up when it was only a foot high, leaving the upper half six inches of head; as soon as the top grew a foot more, you would have to take the branches off six inches higher up the stem, and so on; but when it has grown tall enough, you may cut

away all branches but those which you wish to form the head with. The top bud of the main stem growing upwards must then be pinched out, and all others that grow too fast must be stopped in the same way. The whole art of growing a specimen consists, in short, of taking out ugly branches, and stopping those that are too vigorous, until it come into something like the form you want it, shifting it from one pot to another as the old one fills with roots, and taking care that it has water and air when they are wanted. Amateurs who wish to begin a few should order those which form the greatest contrast. *Fulgens*, *Ricartonii*, *Chandlerii*, *Globosa*, *Globosa Major*, *Venus Vjtrix*, *Conica*, and *Rosa Alba*, are cheap, very unlike each other, and would suit a beginner well, and they could not begin at a better time, or with a better stock, for the chance of raising strange seedlings.



MUSA CAVENDISHII, OR DWARF SUGAR BANANA.

THIS plant is one of the best, if not the best of the whole genus, and there are so many spurious varieties sold for it, that it is not a fortnight since a contemporary journalist published a figure and description quite at variance with the true *Musa Cavendishii*. In the early part of 1837, Mr. Paxton, the gardener at Chatsworth, in reference to the number of plants talked of, wrote thus to his friend, Mr. Loudon:—

"The only plants that I know to be true of *Musa Cavendishii* are at Lord Fitzwilliam's, and A. B. Lambert's, Esq., and one at the Edinburgh Botanic Garden. Mr. Cameron,

with whom I have recently had some talk on this subject, assures me that he never received but two plants from the Mauritius, one of which was purchased at Mr. Barclay's sale by a Continental botanist. Messrs. Rollisson, of Tooting, have plants that very much resemble it; but, as there are so many kinds of dwarf Musas in the Mauritius, and as the Messrs. Rollisson *cannot give any satisfactory account of the introduction of their plants*, I am led to doubt their origin.

"By this time next season I shall have 100 plants of the *M. Cavendishii*, part of which I

shall have to distribute. I forgot to mention that the fruit, when ripe, was larger than any I ever saw produced by *M. Sapientum*, or *M. Paradisiaca*; and that the flavour, when in perfection, combines that of the pine-apple, the melon, and the pear."

It was considerably after this that Luccombe, Piner, and Co., exhibited a very good specimen at the Meeting of the Royal Society of Horticulture, and the figure taken at the time was thus noticed in the books and papers of the Society:—

"This very valuable plant, of which a remarkable fine specimen in full fruit was exhibited at the Egyptian Hall on the 11th inst. (December 1837), by Messrs. Luccombe, Piner, and Co., of the Exeter Nursery, is a native of China, whence it was sent by Mr. Telfair, to the late Robert Barclay, Esq., of Bury Hill. There are only about TEN distinct species of *Musa*, recorded by botanists, some of which are cultivated merely for the beauty of their flowers, whilst the others are amongst the most valuable fruits of tropical production; there are, however, very many varieties, differing widely in their merits as to flavour, size, &c. In the Polynesian Islands there are not fewer than thirty varieties cultivated by the natives, besides upwards of twenty kinds very large and serviceable that grow wild in the mountains of those islands. M. Humboldt remarks that there are several varieties of *Musa* which are paramount in cultivation, some requiring a high temperature to bring their fruit to perfection; others flourishing in a much lower one. The present species of *Musa* may justly be considered the most valuable one of the genus; it has long been a desideratum to cultivate successfully the *Banana*, but, although in some instances where abundance of room, and other requisites, have not been grudgingly bestowed, it has attained a tolerable degree of perfection: still the unwieldy size of the species then under cultivation (*often attaining the height of from twenty to thirty feet, and even more*) has militated against its being grown otherwise than as a mere matter of curiosity or ornament. All these objections are removed in the species of *Banana* now under consideration, for in consequence of the *dwarf* growth, or condensed habit of the *Musa Cavendishii* (the plant exhibited by Messrs. L., P., and Co., the other day, being only three feet six inches from the roots to that part of the stem whence the pendant spatha issues, and upon which its numerous delicious fruit are produced), so that it may be cultivated in any ordinary hothouse. Nothing can be more simple than the mode of culture required, as so successfully practised by Messrs. Luccombe, Piner, and Co. A box, about from two to three feet square, and as many deep, should be filled at the bottom about nine inches deep, with rubble or potsherds, to ensure a complete drainage, and the remainder of the space

filled up with a compost of loam, peat, and well rotted dung, in equal proportions; in fact any light rich soil will suit, taking especial care that the box is well drained, as it requires abundance of water when in full growth; a temperature of from 65 to 80 deg is amply sufficient. The average quantity of fruit produced by a well-grown plant will be from FIFTY to EIGHTY. The fruit exhibited at the Egyptian Hall were about *ten* inches long, and about from *twelve* ounces to sixteen ounces each in weight. When fully ripe, they are of a fine lemon colour, and of a very delicious and peculiar flavour; it is propagated by suckers, which should be taken off from the parent when about a foot to eighteen inches high, and they will produce fruit in about eighteen or twenty months from that time."

The following notice, by an indifferent person, published some time before the figure was taken, and by an eye witness, still more confirms the fact, if necessary, that this is the true figure of the *Musa Cavendishii*, and that the plant flowered lately, and noticed in a weekly paper, is not the true one. It flowered for the first time in England, in the superb collection of the Duke of Devonshire, at Chatsworth, in 1835, where its numerous deliciously flavoured fruit were much esteemed.

"The plant in the Exeter Nursery fully maintains that DWARF character for which this species of *Musa* is justly famous; and as it is in the greatest possible luxuriance, there is a good prospect of abundance of fruit. *Musa Cavendishii*, may be cultivated with as much ease as a pine plant, and its introduction from China into this country may be considered an important event in Horticulture. Dimensions of the plant of *M. Cavendishii*, in the Exeter Nursery, July, 1836; extreme height of stem from surface of soil, three feet five inches; circumference of stem at the base seventeen inches.—N.B. The drooping spatha, which encloses the fruit, begins to *descend* at three feet five inches from the soil."

We believe there are several *Musas*, the fruit of which are similar, but less fine in flavour, certain it is that the one figured here is a grand desideratum, whereas the lofty kinds would be no acquisition in English establishments.

WEEKLY JOURNAL OF GARDENING.

AURICULAS.—Choose a north-east aspect for blooming these delicate flowers under hand-glasses. If a temporary table can be placed for them it is better than the ground, and about nine pots will stand under a full-sized glass, prop it up at the corners with four small pots, so that the rim of the glass be below the foliage of the plants. Let the whole be covered over of a night, with a cloth or mats; remove the plants to this situation as fast as the blooms rise and begin to show colour.

Take off the offsets from blooming plants intended for show, and plant them round the edge of a pot plunged in a north border. Seed may be now sown and placed in a cold frame, or in the greenhouse. Auriculas cannot be kept too close from frost at night; and in the mornings and evenings, if the cold wind reach the opening blooms, they will be set, crumpled, and spoiled. Remove plants to the blooming place as soon as they show colour, part the pips occasionally as they get forward, to prevent their injuring each other to form a more even truss, and to give room to the inner pips to swell. We hardly know a more critical time than this for the advancing blooms, and when the plants are once under the hand glasses to bloom, they should of a night be covered up with a rug, instead of mats, in the event of very bad weather, or, at all events, with double matting.

TULIPS exposed to the frost may, in some situations, show brown or white spots, and damages on the foliage; it will be well to take away all such damages with a sharp knife. The same must be observed with regard to those under stages, though, if they were properly attended to, there will be no such damages.

POLYANTHUSES may be parted, if you have plants of which you do not want the bloom, and planted out in a rich shady border. Seed of choice sorts may be sown in a seed pan, and placed in any sheltered situation, or in a cold frame or greenhouse.

GREENHOUSE.—It is necessary to give occasionally fires by day, that you may be enabled to give air, and get rid of the damp; in other respects, no alteration from our previous winter instructions.

Train all CLIMBERS in pots carefully as fast as they grow, that the surface exposed may be natural; if the training is delayed until much growth has taken place, the backs of the leaves will be outwards, and the training will be unnatural.

CARNATIONS.—Dealers must not pot them until the last moment, as it were, because they want to send off plants as long as possible, but the amateur must not delay his merely because he sees the dealer he bought them of has not begun his; therefore, this week give the compost a last turn over, and sift, looking very carefully for wire worm and grub, and prepare for potting, by having the pots all cleaned well, and breaking up crocks for the drainage, making proper labels for the larger pots, preparing your stage to place them on as soon as they are potted. The most simple stage is flower pots turned upside down in pans of water, from four to six feet apart, and planks laid across them; on these the large pots may stand, and the water is a sort of stoppage to a good many sorts of vermin.

DAHLIAS.—Be as careful to renew the heat of declining hot beds for the cuttings not yet struck, as you would for cucumber plants; half

the cuttings lost are lost through the want of heat, and the attempt to supply its place by keeping the frames close. The old tubers of those varieties which you have sufficiently increased, may be reduced to one strong shoot, which will run up, and do well, for early flowering; or they may be divided and repotted.

CAPSICUMS and LOVE-APPLES, or TOMATAS, may be sown in pots, and placed in a frame; any already up, may be pricked out, two in a pot, if for ultimate planting out of doors; but if for in-door growth, one in a pot is sufficient.

GOURDS, or VEGETABLE MARROW, may be sown in pots, and treated as cucumbers, until the time arrives for planting them in the open air.

GRAFTING may still be performed, but it is very late, and ought to have been all done; sometimes, however, we obtain a choice graft later than this. Look over all that have been grafted, and see that the clay has not cracked, or become defective, and if it have, it must be set to rights.

BUDDED TREES, worked last summer, will now begin to grow; take off all shoots that come from the stock, and if the eye has advanced at all, see that it is not attacked by grubs of any kind; examine every curled leaf.

SMALL SALAD may be sown weekly.

SRA KALE.—Make beds, either by sowing seeds in drills, four feet apart, and pretty thick, to enable you to thin out all the weak plants, or by planting old roots.

GARLICK, SHALLOTS, and CHIVES—May still be planted, kidney beans, plant; clear and earth those already up.

April 1, 1843.

SCIENCE OF GARDENING.

By the Author of the Domestic Gardener's Manual. In this age of reading, and I may add book-making, much curiosity has been excited, and some real information undoubtedly afforded. But as respects the *Science of Horticulture*, seeing that it involves researches into principles which cannot be subjected to arithmetical or mathematical proof, it must be admitted that visionary theories have supplied the lack of sound and fundamental truths. Some persons—professional and operative gardeners in particular—will be inclined to start an objection against the very term of *science*, as applied to gardening, as having little to do with digging, hoeing, potting, &c., which are mere operations of routine, requiring skill and precision, but nothing further. This is so far correct, but no farther, and these able men effect what is required of them, and indeed all that their education enables them to perform. Nevertheless, *gardening is a science* of the highest order, for it embraces a knowledge of the great natural agents; light or ethereal fire, water, air, and the earths. Botany, vegetable physiology, and chemistry, are also closely allied to it, and become indispensable to those

whose aim it is to investigate the phenomena which meet the inquirer at every step he takes.

The *amateur* gardeners—a class which of late has become very extensive, are liable to embrace an error of a contrary nature: they are *readers*—they entertain no doubts of the science upon which every operation is based; but they are too apt to become theorists, and that, not upon the ground of their own investigation of effects and causes, but by attaching faith to the authority of some great name.

It is perfectly right that every one who has the inclination to read, and time at command, should attentively peruse the writings of scientific philosophers; but were persons of curious and inquisitive minds to adopt the practice of Mr. Knight, he says there would be an end of that blind credence which has affixed the stamp of truth to mere hallucinations, and “given to empty nothings a local habitation and a name.” “My time has been always employed more in ascertaining what *I could myself discover*, than in reading accounts of the discoveries of others.”

It cannot be expected that men who labour in their vocation, can devote much time to the study of dry abstract science, but there is a mode of teaching, which, if ably adopted, would tend to convey instruction by familiar example, and cause pleasure to go hand in hand with industry. The science of horticulture may be said to include seven subsidiary branches; these I have above named, and therefore shall only observe that light, or fire, that paramount and most energetic natural agent, is of a nature so subtle, that it cannot be investigated by instruments or tests. *Vegetable physiology* is to a certain extent in the same predicament, for after all that has been written and contested on the vegetable structure, the development of albumen and liber, the situation or organization of sap vessels, we really know nothing, can define nothing, and must be content to oppose theory to theory; while, in sober truth, we must acknowledge that all the experiments by cuttings, coloured infusions, maceration in acids, and dissections by instruments, are just so many mutilations, tending only to confuse, to produce optical delusions in the operator, and to mystify and bewilder the reader. The three other natural agents—air, water, and the earth—also the sciences of botany and chemistry, are, in a great degree, subject to the controul of man; and fortunately they may be so employed, as to effect all that the most energetic teacher and student can require.

Light, also, is less absurd than it was, for by the grand electrical discoveries of Mr. Faraday, we have obtained a clue which may lead to an effulgence, if it be skillfully followed. Thus, then, an instructor possessing a candid and liberal mind, may elucidate many important facts, and bring science to bear upon the ordinary operations of gardening, in a way equally pleasing and profitable.

One of the commonest, but least understood, operations of the garden, is the decomposition and appropriation of manures. Any one knows how to bury and distribute the putrescent substances in and among the earths of the garden pots, but few can appreciate the astonishing changes which are effected by the play of affinities between the stimulating vital principle of the living vegetable, and the otherwise inert matters which constitute the bed in which it is fixed.

The investigation of soils—of manures, animal and vegetable—of the ashes produced by fire—of water, and of atmospheric and other air, or gas, becomes the subject of legitimate chemical inquiry: but, if chemistry be applied to the investigation of organised bodies, endowed with the vital principle, its powers are misdirected, and confusion and disappointment must be the inevitable result.

In examining the progress of vegetation, and the operation of the agents by which it is effected, care should be taken to distinguish between the natural *developments* of the plants, and the *causes* which produce them. The former, being externally viewed, should be correctly noted, and referred to the science of *botany*. But as to the internal causes, the progress and essence of the sap, the office of the leaves, the return, or downward and lateral flow of elaborated sap, the production of cambium, and the like,—these are subjects of pure hypothesis, and ought to be treated of modestly, and with reserve.

A wide field is before us, we have opportunities in abundance, and every subject of the garden, from the merest weed to the most refined fruit of the stove and vinery, with all the operations of man connected therewith, are legitimate objects of chemical and botanical research; and he who can seize every opportunity to direct the inquiring mind into the right path, by pursuing which it can at every step acquire some pleasurable and yet dignifying information, may do more for the cause of true science, than has heretofore been effected by all the profound and sententious treatises which have ever been written.

G. G.—1837.

GARDENER'S NOTE-BOOK.

ATTAR, or OTTO OF ROSES, is made from the hundred-leaved rose (*Rosa centifolia*), which species is also used exclusively in the distillation of rose water. The genuine otto of roses is not, it is said, prepared by distillation, but by putting a quantity of carefully picked rose leaves into a jar or cask, with just sufficient water to cover them. The vessel is then set in the sun for a few days, and in about a week the otto (a butyraceous) oil collects in the form of a scum upon the surface, and is removed by a piece of cotton. [I have observed the oil, but I could not collect it, yet I never persevered much.]

COOK versus GARDENER—STEAMING POTATOES.—Many a time have I been blamed, and the potatoes condemned, because the cook did not know how to steam. The whole mystery consists in suffering the steam to escape, and at the same time keeping the potatoes hot. When the cook throws off the water, under the jurisdiction of the cooking book, what is she to do next? The steam rushes out, and she places the vessel opposite the fire; but, fearful that the potatoes may cool in the meanwhile, she puts on the cover. Thus she undoes one process by the other, for the steam no sooner escapes from the potatoes, than, being confined by the lid, it condenses rapidly, and falls back in water upon the vegetables. And thus, through the ignorance and obstinacy of our cooks, we are perpetually served with, what are familiarly called, wet potatoes—a sort of vague excuse, which helps to throw the fault upon the season or the gardener, or any thing, or any body, rather than the real culprit. The Irish peasant woman, wholly ignorant of science, but with instinctive sagacity, gets rid of the difficulty by the simplest process imaginable. Placing the vessel without the cover in a slanting direction opposite the fire, so as to hasten the process of steaming by the action of the external heat, she throws a napkin over the potatoes, which receives and retains so much of the steam as does not effect its escape, while it performs the equally essential office of preserving the heat to the vegetables below.

BEST TWENTY-FOUR CARNATIONS.—In 1837 Mr. Bucknall, of Bristol, in a letter to Mr. Glenn, sent the following as the best twenty-four Carnations. I grew them till 1840 without being able to improve them much.

Scarlet Bizarres: Roi des Capucins, Fletcher's Duke of Devon, Willmer's Conquering Hero, Strong's Duke of York.—*Crimson Bizarres*: Cartwright's Rainbow, Young's Earl Grey, Wood's William the Fourth, Wakefield's Paul Pry.—*Pink and Purple Bizarres*: Stone's Venus, Hooper's Rajah, Chamber's Hebe, Gould's Prince George.—*Rose Flakes*: Brook's Flora's Garland, Coquette de Paris, Jacques' Phœbus, Clark's Lady Farnham.—*Purple Flakes*: Dr. Franklin, Brook's Duke of Beaufort, Willmer's Defiance, Lascelles' Queen of Sheba.—*Scarlet Flakes*: Hufton's Magnificent, Brown's Bishop of Gloucester, Addenbrook's Lydia, Fletcher's Beauty of Birmingham.

TO DESTROY ANTS.—The best means to get rid of ants is, to place in their way a covered box, having three or four passages into the interior, which should be so contrived as to be of some little length, either on the outside or within. Put a little treacle or spoilt honey in the box. The ants will assemble in great numbers; every two or three hours take up the box, and destroy the ants by exposure to the fire; everytime you empty the box of the insects

put in fresh treacle or honey. This method is infallible, and will prove destructive to the most populous nests. [It certainly does thin them very quickly, but it is a tedious, as well as almost an endless job.]

GIVE GARDENS TO THE MILLION.

It is the fashion to provide for the millions, and it is so good a fashion, that the marvel is how the millions could have been neglected so long. It is our ambition to do our best in the gratifying task; and we trust we shall contribute as much comfort with our information as our more noisy fellow-labourers, who initiate the crowd into the mysteries of music, or our more active rivals, who inoculate the innocents with the love of dancing. Horticulture is one of those beautiful sciences which give delight to the very tyro, every step we proceed in it is complete in itself, and nature is a kind and constant help-mate. If we accomplish but the growing of a cabbage, there is an object achieved; and however limited our capacity, the science has, among its thousands of lessons, some which we can learn, if there be but a patient teacher to set us our task; and when we have accomplished it, we have the tangible fruits of our labour before us. We may overrate our own talent, but we cannot be deceived long. The painter may be told he is clever, and may be willing to believe it in the proportion of his ignorance of right and wrong, but the Horticulturist cannot be persuaded that a bad cabbage is a good one. Dame nature may be fickle, but she is not so fickle as dame fortune; and the gardener, with his few rods of cottage garden, is as happy in the success of his out-door crops as the prince in the superiority of his conservatories and forcing-houses. Not to run down other pursuits by an invidious comparison with Horticulture, it must be conceded, that however rational music and dancing may be, they have their temptations, which Horticulture has not. Industry forms its very base, and forethought is the first duty it engages. Every operation is to provide for the future, and teaches us the necessity of calculating consequences. Every growing crop brings its labour;—we cannot look upon it without being reminded of what should be done—we cannot perform it without instantly observing its advantageous effects. Emulation to rival our neighbours in the articles we grow engages our care and watchfulness, and if we succeed, the reward is sweet. Nor is our neighbour without consolation: for if we have excelled him in one production, he is sure to have excelled us in another. We are right then in saying, that a garden and the love of Horticulture confers happiness, and teaches forethought—begets emulation—inculcates the knowledge of the value of industry—because it makes even our recreation productive. Look well, then, ye owners of

the soil, to the cottagers—give them gardens, that they may be happy, and teach them enough of gardening to make them emulous: give prizes for the best productions, that they may be industrious and persevering. Be assured that he who enjoys the labour in a garden as a relaxation from other labours, realises the old saying, "that a change of work is a holiday;" and if he work in the day, amidst the unwholesome vapours of a factory, his garden preserves his health and lengthens his years. Oh! that we could see every adult enjoying his ten rod of ground instead of his seat at the alehouse, and his children's first lessons of industry be given in the garden. But this is impossible; yet how much could be done by the landholder, if he allotted a portion of the soil among the poor, at a moderate rent, and encouraged them to cultivate it to advantage. We do earnestly entreat our wealthy readers—nay, wealthy or not—those readers who have but an acre of ground to spare, to make sixteen poor men happy, by letting them ten rods each, at 6d. per month. Nay, everybody who has but an odd corner of ground, that is not wanted for his use or ornament, should devote it for that purpose; for every man that can be served with enough land to form a garden, is made a better man, and the father of a better family.

GARDEN REMEMBRANCE FOR MAY.

Thin out Carrots with the hoe, so as to leave them six inches apart, if of the large kind, and four inches if early horn.

Thin out Parsnips to nine inches.

Sow long Pod Beans.

Sow more Broccoli, if wanted; also Brussels Sprouts.

Sow more Sprouting Broccoli, if required.

Sow White Broccoli, if you have plenty of room.

Sow Cabbage, of the Battersea kind, or early York, about the middle of the month.

Sow Cauliflower the second week, and plant out any that are large enough.

Cellery, prick out from the seed bed as soon as the plants are large enough to handle, in a rich warm situation, in very rich soil.

Small Salad must be sown every week to keep a supply up; but the wants must dictate the quantity.

Kidney Beans sow in drills, two inches deep, and drawn eighteen inches apart, and the beans three inches apart.

Scarlet Runner Beans sow three inches apart, in rows for sticking, or against a wall to train up strings.

Sow a few early Dutch Turnips.

Transplant Leeks, as soon as they are large enough, nine inches apart in the row, and the rows a foot asunder. It is best to draw drills with a hoe and plant at the bottom.

A little Spinach may be sown in a shady situation, with a chance of its escaping running to seed; it is, however, a risk.

Nasturtium may be sown to run up sticks like peas, only that the sticks must be rather tall.

Peas may be sown, for succession, once or twice during the month.

Auriculas, if you want seed, must be placed so as to have all the rain, wind, and sun, but they must stand on some hard substance, to keep them clear of worms. If no seed is wanted, the stems may be cut down.

Dahlias should be planted about the third week, and not before, six feet apart every way.

Carnations, which are of course potted, should be constantly watched and watered. If there be any not potted, pot them, or plant them out in the open ground directly.

Heartsease should be well watered when rain is deficient. Propagate from side shoots or cuttings; and seed may be sown in pans: shade blooms wanted for exhibition.

Geraniums, Tender Annuals, Hydrangeas, Heliotropes, Verbenas, and other tender plants, used for clumps, may be planted out the third week.

Pinks are throwing up their flowering shoots, take off all but one.

Propagate Double Wall Flower, and other Perennials, by cuttings.

Vines.—One of the great faults in the management of a Grape Vine, by those certainly unacquainted with them, is leaving too much wood—that is, too many branches. Let these be pruned out so as to leave only strong limbs, and all the side shoots to each long limb may be cut down to the lowest eye. If there be plenty of young healthy wood, and the vine be crowded, taking out the worst or ugliest of the old wood, and filling up the space with younger branches, may be beneficial. Prune everything not already pruned—gooseberries, currants, raspberries, trained trees on walls or espalliards.

DESTROYING THE RED SPIDER.

THE Red Spider is one of the most formidable enemies with which the gardener has to contend, and against which he is least well prepared with the means of defence. His peach and nectarine trees upon the open wall are often considerably injured by it; and the conservatory, the forcing frame, and the stove, scarcely present a plant which is not subject to suffer from its attacks. When it appears upon trees growing upon walls in the open air, and wherever water can be abundantly applied without material injury to the plants, it is easily destroyed; but there are, I believe, comparatively few plants, which are not much injured by having the lower surfaces of the leaves much wetted. In a former communication I stated the destructive effects upon the melon plant, of the application of water to

the under surface of the leaves, apparently owing to the cells of that surface of the leaf having absorbed the lighter fluid, in the manner pointed out by M. Dutrochet, and transmitted into the denser fluid, the vital sap of the plant.

The aversion of the Red Spider to sulphur, or its inability to live in the close vicinity of that substance, has long been known to gardeners; and the object of this communication is only to point out a more efficient mode of employing it than has, I believe, hitherto been practised. The instrument which I use bears a very close resemblance to those employed in fumigating with tobacco, but it is filled with pieces of the wing feathers of pigeons or poultry, amongst which a small quantity of flowers of sulphur is dispersed. The receptacle is then closed with a lid, the front surface of which is perforated with many small holes, through which the air, impelled by the bellows, passes, carrying with it a portion of flowers of sulphur. By shaking the bellows, the feathers are made to change their position, by which many successive portions of flowers of sulphur are made to escape, till the whole which the receptacle contains is expended.

I first employed this instrument in the last summer in my melon-house, in which, upon some of my plants, I observed a large number of Red Spiders. After using it I noticed with a lens, in the web, an immensity of minute particles of sulphur, in company with a very large number of Red Spiders; but upon examining my plants three days afterwards, I found the particles of sulphur alone remained, and that the Red Spiders had either died or marched off. I found no difficulty in causing many minute particles of sulphur to adhere to the under surface of the leaves of all my plants, and during the remainder of the summer I was not able to find a single Red Spider upon them.

The form of the instrument for melon plants, growing in hot beds, requires to be considerably altered; and the perforations for permitting the escape of the flowers of sulphur should be lateral, instead of being in the front of the lid; that should be made slightly conic, and of less width than the receptacle, so as to come within it to a small depth; by which means the whole of the flowers of sulphur that escapes will be impelled forwards. The apertures should be confined to one side of the lid, which should not sink wholly into the receptacle; and through such apertures the flowers of sulphur will be made to escape below the level of the leaves of the melon in the common frames, and so dispersed over the under surface of its leaves.

I applied flowers of sulphur in several other cases, in the last summer, and always with success; and I am applying it to my peach-house and vinery, instead of water from an engine; and I have reason to believe with perfect success.

My friend, Mr. Williams, of Pitmaston, has

perfectly succeeded in banishing the Red Spider from his melon-house, by causing sulphur to evaporate from the hottest part of his flues; but I think not without some ill consequences. His machinery is a good deal superior to mine, and his skill and science in no degree inferior; but his melons, though very large, and apparently perfect, are generally much surpassed by mine in richness and flavour. When sulphur is made to evaporate, some uncombined acid flies off, and this Mr. Williams suspects (and I agree with him in opinion) to operate injuriously upon the health of his plants. It seems probable that the same uncombined acid would cause the flowers of sulphur to operate injuriously, but though I have often applied it in large quantities, I never witnessed any ill effects.—*Mr. Knight, Hort. Trans.*

RIBES ALBIDUM, OR WHITE FLOWERING CURRANTS.

THE Ribes is a genus of which the most familiar variety is the common Currant tree; but there are many kinds in cultivation as flowers, whose fruit are valueless, except as seed for new plants. We have ribes *aurea* or *lutea*, with yellow blooms; Ribes sanguineum, with red blooms; and of the latter the seeds have been sown, and have produced various shades, from deep blood colour to light blush. The blooms of this tribe are in bunches like the fruit of the ordinary red and white currant; but there being no weight to bear them down, they hang in feather-like forms, and are much more beautiful than if they were in bunches like the fruit itself. Ribes albidum is a variety from seed; and in giving some account of it in the monthly work of which he is editor, he says, "whether it is an accidental seedling or a hybrid, we are not aware." Now if there be any difference (as the Irishman is permitted to say), "*if there be any difference*" between an accidental seedling, or a hybrid, "*they are both alike*:" a hybrid is a cross impregnation by hand, and an accidental seedling is cross impregnation by flies, insects, or the wind—in each case the pollen of one plant is removed by some means to the pistil of another. The produce is the same. However the plant under notice is a beauty. Its racemes of flowers are more bold and prominent, the main stem which sustains the flowers is stronger, the flowers larger and better formed; and it is altogether a very desirable addition to our out of door shrubs, because all who grow the Sanguineum must grow this by its side. The plant was obtained from seed of the Ribes Sanguineum, in the gardens of Admiral Sir David Milne; and the stock was transferred to Messrs. Handasyde, of Musselburgh, near Edinburgh, who let it out last autumn. It has a pink-white flower, with a

pink eye, and is in every particular a very desirable plant in a shrubbery or border.

The cuttings of all this tribe strike so readily that it is almost impossible to fail, if they are properly managed. They must be cut up close to a leaf bud or eye, and be planted as deep in the ground as they are above; but as quantity in all new things is an object, three inch lengths, planted half the length in the soil and half above it, will be quite enough; they may be taken off any time after the leaf falls until the buds begin to swell again, and be planted in the open air; but where there is not length enough to go deep in the ground, it is best to cover with a hand-glass, because some time during the winter the frost reaches a good way down. Perhaps, upon the whole, if you have the plant by you, the best time to take off the cuttings is in March; but when things are scarce, we must take the time that we are able to get them. They are hardy, and if stopped at every branch as soon as they are three inches long, the plant will grow handsome and shrubby. In "Paxton's Magazine of Botany," there is an excellent figure of the flower, and enough of the plant to indicate its habit.

LANTANA CROCEA.

A VERY handsome plant, with round tufts of small flowers, a third of the size of the common Candy Tuft. The outer flowers are deep red, but as they approach to the centre, they are orange and bright yellow. It has been treated generally as a stove plant; but has been found to succeed during summer, in the open borders, where it acquires a dwarf habit, flowers in abundance, and makes a great show. There are many species or varieties—for we maintain that Botanists confound these terms a good deal too much—among which we may mention *L. Mixta*, nettle-leaved; *L. Trifolia*, three-leaved; *L. Annua*, annual; *L. Stricta*, narrow-leaved; *L. Radula*, rasp-leaved; *L. Cammara*, various coloured; *L. Involuta*, round-leaved; *L. Recta*, upright; *L. Odorata*, sweet-scented; *L. Mellissefolia*, balm-leaved; *L. Scabrida*, rough; *L. Niven*, white-flowered; *L. Aculeata*, changeable-coloured; *L. Fucata*, painted; *L. Salvifolia*, sage-leaved; *L. Braziliensis*, Brazilian; *L. Alba*, white, and others. Many of these are of pretty shrubby habit, bloom freely, and are worth the attention of those who have stoves and greenhouses; but none are more beautiful than the variety under notice, the brilliance of whose flowers is scarcely surpassed by any stove or greenhouse plant. The cuttings strike freely with bottom heat, and they make a great show in fancy flower beds, if planted in the open ground at the end of May. This is well figured in "Paxton's Magazine," and is said to have been raised from Mexican seeds, by Messrs. Young of Epsom. Jamaica is, however, said

to be the native country of *Lantana Crocea*; and Mr. Paxton raises a doubt whether the subject under notice be the true *Crocea*, though it is grown, known, and sold under that name, and "A Rose by any other name would smell as sweet."

THE FATHER OF ENGLISH BOTANY.

THE following notice of JOHN TRADESCANT, the elder, the father of the science of English botany, cannot but be interesting to all admirers of horticulture. This celebrated man flourished in an age when little encouragement was given to the pursuits in which he delighted, and exhibited, in the prosecution of his studies, an enterprise, a judgment, and an enthusiasm, which has been rarely equalled, and certainly never surpassed. It is not too much to say, that England is indebted to him for the earliest knowledge of a science, which has, under more fortunate auspices, arrived at its present perfection; that Linnaeus was so fully persuaded of his great merit and attainments, that, in honour of his memory, he has, in his system, designated a genus, *Tradescantia*, from his name; and that, at this moment, though nearly two centuries have elapsed since he flourished, his exertions in the cause of science are still felt, and should be duly appreciated. The following notice is taken partly from a letter of the celebrated antiquary, Dr. Ducarrel, to Dr. Watson, printed in the *Philosophical Transactions*, partly from the diary of Ashmole, to whom he bequeathed his museum, and partly from the accounts and papers connected with his biography, in the Pepysian Museum, at Magdalen College, Cambridge. There is also some further account of him in Parkinson's *Garden of Pleasant Flowers*, 1656, a book now but little consulted, except by professed antiquaries, &c.

Anthony Wood tells us that Tradescant was a Fleming. We are informed by Parkinson, that he travelled over most parts of Europe, and tradition relates that, in 1620, he entered himself on board a privateer going against the Algerines, that he might have an opportunity of bringing apricots from that country. There is no doubt whatever of his having been in Barbary; and, from the emblems formerly sculptured on his monument in Lambeth church-yard, which is now almost destroyed and forgotten, but of which two drawings fortunately exist in the Pepysian Library, it, moreover, appears that he had visited Greece, Egypt, and other eastern countries.

In his travels he is supposed to have collected not only plants and seeds, but most of the curiosities of every sort, which, after his death, became the property of the celebrated Elias Ashmole, and which were deposited by him in his museum at Oxford. This museum was a prodigious proof of the indefatigable labour of Tradescant. The writer of this notice visited

it about thirty years ago, it was then in a most dilapidated and neglected condition; he also visited it about five or six years ago, and is happy to say, it has undergone a complete renovation, and formed one of the most interesting sights in the celebrated university to which it belongs.

When Tradescant first settled in this kingdom cannot at this distance of time be ascertained; it was probably towards the end of the reign of Elizabeth, or the beginning of that of James I. There is a print of him by Hollar, before 1656, which represents him as a person very far advanced in years.

He lived in a great house in South Lambeth (of which from the many alterations and building in that district, it is now very difficult to guess the situation), where his museum was frequently visited by persons of rank, who became benefactors thereto. Among these was King Charles the First, who appointed him his gardener, Queen Henrietta Maria, Archbishop Laud, George Duke of Buckingham, Robert and William Cecil, Earls of Salisbury, and many other persons of distinction.

John Tradescant may therefore be justly considered as the earliest collector in this kingdom, of every thing that is curious in natural history. A catalogue published by his son contains an enumeration of many plants, shrubs, trees, &c. growing in his garden, which was very extensive. A list of some of them is inserted, and this able man by his great industry made it manifest, in the very infancy of botanical science, that there is scarce any plant in the known world that will not with proper care thrive in this kingdom.

The great double yellow bastard daffodil.

Moly Homericum, vel potius Theophrasti—the great Molly of Homer.

Moly Indicum, sive Caucason—the Indian Moly.

Ephemerum Virginianum Tradescanti—the spider wort of Virginia.

Gladiolus Byzantinus—Corn flag of Constantinople.

Heleborus albus vulgaris—white helebore.

Nardus montana tuberosa—knobbed mountain valerian.

He also introduced a new strawberry from Brussels, but the berries did not ripen well.

A new and great variety of plums from Turkey. The Angier, or Algiers apricot.

The house at South Lambeth was not inappropriately called "Tradescant's Ark." It came into the possession of Ashmole, who enlarged it, and adorned a chimney piece with his own coat of arms impaling those of Sir William Dugdale, whose daughter was his third wife. The site of this house is at present doubtful. Dr. Watson and Dr. Mitchell visited the garden in May 1749;—the former gives this account of what was then in existence:—"This garden was planted about 120 years since, and was, except

that of Mr. John Gerard, the author of the Herbal, probably the first botanical garden in England. The founder, after many years spent in the service of the Lord Treasurer Salisbury, Lord Wotton, &c., travelled several years, and procured a great variety of plants and seeds before not known in England; to several of which, the gardeners at this time gave his name, as a mark of distinction, as Tradescant's spider-wort, Tradescant's aster, Tradescant's daffodil. He first planted here the *Cupressus Americanus* *Acaciæ foliis deciduis*, which has been since so much esteemed, and is now one of the great ornaments of the Duke of Argyle's garden at Wilton. Mr. Tradescant's garden has now been many years totally neglected, and the house belonging to it empty and ruined; and though the garden is quite covered with weeds, there remain among them manifest footsteps of its founder. We found there the *Barrago latifolia sempervirens*, of C. B., *Polygonatum vulgare latifolium*, C. B., *Aristolochia clematidis recta*, C. B., and *Dracontium*, Dod. There are yet remaining two trees of the *Arbutus*, the largest I have ever seen, which, from their being so long used to our winters, did not suffer by the severe colds of 1729 and 1740, when most of their kind were killed throughout England. In the orchard there is a tree of the *Rhamnus catharticus*, about twenty feet high, and near a foot in diameter, by much the greatest I ever saw. It is not unlikely but there may be several other plants yet remaining in the garden, but flourishing at a different time of the year.

It appears that in 1773 the monument of Tradescant was repaired, and the original inscription cut upon it; the expense was defrayed by public subscription, and a drawing placed in the parish chest of Lambeth church. The following is the inscription:—

"Know, stranger, ere thou pass this stone,
Lye John Tradescant, grandsire, father, son:
The last dy'd in his spring; the other two
Liv'd till they had travell'd art and nature through,
As by their choice collections may appear,
Of what is rare, in land, in sea, in air;
Whilst they (as Homer's Iliad in a nut)
A world of wonders in one closet shut:
These famous antiquarians that had been
Both gardeners to the rose and lily queen,
Transplanted now themselves, sleep here; and when
Angels shall with their trumpets waken men,
And fire shall purge the world, these hence shall
rise,
And change this garden for a Paradise."

FLOWERS IN VASES.

No one can go into Mr. Knight's Nursery, in the King's Road, or into any of the mason's yards in the New Road, or to the Terra Cotta works, on the Surrey side of the bridges, without being struck with the beauty of the rich and elegant vases, formed in imitation of sculpture, which are exhibited. These are but poor looking things in a garden, unless furnished with

flowers; and yet, when so furnished, and there is good taste in the mode of doing it, they are extremely beautiful. Every one of the flowers ought to be growing, and yet appear as if the vase were merely filled at random with a great variety. The first thing to remember in providing for this is, that vast trouble is saved by using those flowers which are permanent bloomers for the main features. The Verbena and Nasturtium form pretty objects to hang over the edge of the vase, which they will do as they grow, and form very pretty objects. The

Cineraria is delicate, and a long time in bloom. The Calceolaria, some of the Noisette Roses, Orange and Lemon Trees, Collinsia, Nemophila, Schyzanthus, Balsam, Cockscorn, Anemone, and various other simple and well known subjects, make a very gay appearance. But the art of making these vases look rich all the year, is to plunge all the subjects in pots, that they may be removed when they fade, or get past their prime, and others substituted. The plants do not grow so rank when confined in pots, and the succession and contrast can always be kept up.



PROPERTIES OF THE NARCISSUS.

THE great variety of this beautiful spring flower would almost seem to defy us to lay down general rules, yet there is no more difficulty in imagining what would be the most beautiful than there is in any other of the numerous families for which we have already provided models of perfection.

It is very true that some Narcissus have only a single flower, others a large bunch—some are white, others yellow—some have narrow petals, others broad—but all are pointed. The only varieties, however, calculated for florists, or show flowers, are those which have bunches or heads of flowers, and a few necessary qualities would render them beautiful objects.

In the first place, the flowers should be circular and large.

Second.—They should expand flat, and the cup which is in the centre should stand out well.

Third.—The petals should be thick, smooth, firm; free from notch or roughness on the edges, and have no points.

Fourth.—The bunch of flowers should not

consist of less than seven; the foot stalks should be of such length as to allow the flowers to touch each other at the edge, and present an even, though rounding, or dome like surface, with one bloom in the middle, the other six forming a circle round it.

Fifth.—The stem should be strong, firm, elastic, and not more than ten inches in length. The leaves should be short, broad, and bright, and there must not be more than one flower stem to a show flower.

Sixth.—If the variety be white it should be pure; and the yellow cup should be bright. If the variety be yellow, it cannot be too bright.

Double flowers, and Narcissus of numerous kinds, with only one or two flowers in a sheath, will not be considered subjects of exhibition, except in collections of forced flowers.

The above diagrams exhibit one bloom as we always find them, the other is as it ought to be, according to our estimate of properties; and though they will not attain this form all at once, those which approach nearest will be the best.

ON DISBUDDING FLOWERING PLANTS.

"The care bestowed on some kinds of fruit trees, and the skill exhibited in their management are quite remarkable when contrasted with the indifference manifested to such expedients by the agents of floriculture,

"There are two or three things in which the

floriculturist would do well to imitate the fruit-grower; and we shall here ask attention to a very simple plan in use by the latter class, which is productive of the happiest consequences, but which has not, as far as we can learn, been much or scarcely at all applied to flowering species.

"Every experienced grower of Peach, Apricot, and Nectarine trees, is an advocate and a practitioner of the process of disbudding; going over them a little before the present period, or later, according to the earliness of the season, and removing carefully all those pushing buds that would appear to furnish unnecessary branches; in or, fact, such as, if left to perfect themselves, would have to be cut away in winter.

"Now the philosophy of this practice is obvious. By preventing the tree from developing superfluous shoots, its strength is clearly husbanded, and thrown into those branches which remain; and which are thereby rendered stouter and more robust, as well as better capable of bearing fine fruit and equally vigorous new branches in the succeeding summer.

"As we have lately insisted much on the advantage of stopping the young shoots of exotics while in a progressing state, in order to make them additionally bushy, and as, in the case of plants that branch freely when so stopped, we have noticed the principle carried to an extreme; we deem it right here to suggest the means by which such a result may be obviated, and to show the desirableness of limiting the practice in particular instances. The mode by which we propose accomplishing the reduction of shoots that are, from pruning or other causes, forming too numerously, is by disbudding, in early spring, as is done with Peach trees, &c.

"The only plant on which we have ever seen the system adopted,—and that but very sparingly and seldom,—is the common garden Hydrangea. This species is known to bear its rich clusters of flowers on the summits of the young shoots; and when these are desired to be particularly large, all the buds are abstracted from each stem (save one or two of the principal) as soon as they show themselves.

"These reserved buds are then encouraged to unfold themselves luxuriantly, by the aid of a mulching of manure on the soil, or by manure water, and thus the noble bunches of bloom met with in exhibitions are obtained. In this example, however, the principle is often carried farther than is requisite for any other plant. One stem alone, from which all the buds are taken but a single strong one, is considered most likely to produce a first-rate show-specimen. Still, for ordinary greenhouse or pleasure-ground objects, a large and healthy plant may be allowed to have many stems, and to each of these two buds may be left for flower.

"No one who has observed the effect of this method on the Hydrangea, will, we are sure, be disposed to question its extremely beneficial in-

fluence; since the contrast between a specimen judiciously thus treated, and one on which all the buds are suffered to open unchecked, is so strikingly marked as to create the illusion which frequently occurs among the less observant regarding richly-cultivated plants, that the two specimens were distinct varieties, or different species. And the sole discrimination requisite in effecting the process is to adapt the treatment to the strength of the plant, leaving merely as many main shoots and buds on them, as the specimen is calculated to perfect thoroughly.

"If, therefore, the plan spoken of be so plainly beneficial in respect to Hydrangeas, it follows that it must be alike useful to every plant partaking of their nature; and, also, in some modified form, to all exotics which, naturally or otherwise, are inclined to bear a profusion of lateral shoots.

"There is, then, a very handsome plant now in general cultivation, which approximates so nearly to the Hydrangea in habit, that it cannot but be improved by being similarly disbudded; and this is the *Fuchsia fulgens*. Being deciduous, and the points of its branches withering every year, while the blossoms are borne in large clusters from the extremities of the annual shoots, it has mostly to be pruned down to a low bush each winter; in consequence of which, it sends out an abundance of laterals from the lower part of all the branches. If these laterals are permitted to take their own course, many of them will be too weakly to form flowers for themselves, and will, therefore, greatly enfeeble those which are capable of flowering; while they accomplish no possible good purpose. Should they, again, be pruned off after they have been fully developed, the operation will be almost useless, as they will then have done all the injury they can do. Hence, the only proper way of avoiding their bad effects, is to rub off the superfluous buds when they are first exhibited, as is done with Hydrangeas; and to leave a certain number of the best buds, such as will most nearly accord with the strength of the plant.

"When this direction is followed, the plants will not be in the least degree unnecessarily weakened, and each specimen will have six, eight, or more fine stout stems, with proportionately ample racemes of flowers, instead of a quantity of weak infertile branches, and scanty imperfect floral developments. In short, the aspect of the plant in regard to its flowers, will be as much changed, as is that of the Hydrangea.

"Nor is the method adapted for application to *F. fulgens* alone. All those beautiful hybrids of which that species is one of the parents, and which in any measure take after it by bearing their flowers towards the extremity of the branches, may be equally benefited by the same operation; and others, even the common kinds, whose flowers are axillary, might have the size of their blossoms very much increased, and the

whole appearance of the plants altered for the better, by attention to them in the end of February, or the beginning of March, divesting them of some of those numberless shoots which they throw out so prodigally. We have tried the plan on *F. globosa* with the most complete success; and, besides making the whole plant and its inflorescence so much more luxuriant, it gives a control over its growth, which is of the highest use; for a regular and elegant specimen may thus be procured with certainty, whereas it would be quite the subject of chance if altogether untended in this manner.

"But there is a much more extensive class to which the process may be applied, including all those plants whose shoots are terminated by clusters of flowers; whether they are naturally prolific in side branches, or have been rendered so by artificial stopping. And it is in this place we must mention, that the habit into which some excellent cultivators have passed of frequently pinching or cutting off the summits of a plant's shoots, to induce bushiness, has led them to disregard a little extravagance, which sometimes results from the practice. We allude to the exuberant quantity of shoots that is occasionally emitted; the very number of which has a direct tendency to enfeeble the flowers; for where there is an immense display of blossoms, there must necessarily be more or less small and imperfect. The preferable course, therefore, we conceive to be, the fostering only a moderate number of shoots, and so allowing the blossoms to be both sufficiently abundant, and singularly fine.

"Referring, primarily, to plants which bloom in terminal bunches, we yet take in those whose blossoms are more scattered and solitary. As an illustration of the former class, we shall instance the genus *Pimelea*. By checking the growing branches of some of the species, they are impelled to put forth a considerable abundance of laterals; and when they have once been brought into this peculiarly branching condition, the shoots become so numerous and dense, as materially to lessen both the flower-heads and the individual blossoms. *P. spectabilis*, the noblest of the species, will well illustrate this circumstance. When it is slightly pruned, in the summer, it forms so many young shoots, that unless a few of these be taken away, the clusters of flowers are very much diminished. But, if the buds which would have constituted laterals be judiciously thinned just as they are about to burst, there will be a far more attractive display of splendid bunches of bloom, and the specimen will have altogether a much neater aspect.

"The same remarks relate quite as fitly to *Pimelea sylvestris*, *hypericina*, and others of similar habitude. Even *P. decussata*, beautiful as it is when so thoroughly covered with its pink inflorescence, would, we think, be far handsomer if it had fewer and larger heads of bloom. And this might be easily brought about by destroying

a portion of the young shoots as soon as they issue from the bud.

"*Ixoras* furnish another very favourable exemplification of the point we are discussing. Those who cultivate them most successfully take care to prune them vigorously, that they may never get larger than mere bushes, and may send out lateral shoots enough to make the production of flowers ample. As a consequence of this pruning, they yearly generate an augmented supply of side shoots, which soon get so numerous that they hinder the leading ones from flowering finely. These, then, we would have examined when the buds were on the point of expanding, and all but those which are intended to flower, with two or three to give an added verdure and compactness to the plant, should be taken off entirely. More magnificent bunches of bloom would thus unquestionably be secured.

"*Lisianthus Russellianus* is another plant which, in certain states, requires to be disbudded. After having bloomed once, or been accidentally broken down, if deterred from seeding, it will send out a quantity of young laterals, which, unless thinned immediately on their appearance, will not more than half or a third of them bloom, and the rest will be very seriously impoverished. But should some of the buds, which are least promising, or are in positions where they can well be spared, be removed at first, the plant will grow and flower with unwonted energy and richness.

"After all, the cases we have selected are merely illustrative of a system which may comprise a vast multitude of plants of all classes, whatever may be the mode in which their inflorescence is arranged. This system is, for the most part, necessary only where some kind of pruning is pursued; and it is for that pruning that we seek to substitute it wherever practicable, because it saves some little time, and a very large amount of the plant's strength and beauty. Pelargoniums, many kinds of climbers, and all plants which, through culture, grow too dense, or bear too many branches to flower perfectly, may be most appropriately subjected to it. Indeed, we know of no exotic that is the object of artificial treatment to promote bushiness, which may not, at some period or other, need such assistance.

"Beyond its usefulness, however, in reference to those specimens which want their side branches thinning lest they get too weak or crowded, we are anxious specially to exhibit its advantages in regard to such as it is wished to make more bushy. Practised on the terminal buds of young plants, it would have all the effect of stopping their shoots, while, at the same time, it spared them the needless expansion of those shoots. There are many plants grown in greenhouses and stoves, which, like those in the open air, finish their summer's enlargement by forming a bud at the end of their stems or branches. And those

which do not grow thus, fold up their leaves into a sort of half-expanded bud. In either instance, the bud or point could be plucked out carefully directly the sap was set in motion in the spring; or the heart of the young shoot could be abstracted as soon as the bud began to develop. This, though a novel, would certainly be a valuable application of the principle; since, by its means, the time and energy wasted on the elongation of the shoot before it would generally be stopped, might in this way be entirely saved. The plan is, moreover superior to winter pruning, in that the stopping of a soft-growing shoot is at once a means of eliciting laterals, while the process of development is much more tardy when an old, hard, and dormant branch is severed.

"There is still another group of plants, on which the system may be practised serviceably, and that is such tuberous-rooted, herbaceous species as *Gesneras* and *Dahlias*. The number of stems which plants of this character will throw up, is always manifest at the time of potting or planting, or very speedily afterwards. And, duly estimating the capacities of the plants, if just such a quantity of stems be then left as will flower liberally, and the buds or eyes of the rest cut out, fine and healthy specimens will be obtained. With respect to *Dahlias*, one good stem will always suffice. For *Gesneras*, three or four may be reserved, as the state of the specimen may determine, and other kinds can be treated accordingly.

"Again, in forcing *Roses*, or any shrubs that have been liberally pruned, and which are not destined for show, but simply to supply flowers for bouquets, however closely the shoots may have been cut in, there will sometimes be buds which give early signs of unfolding themselves badly, and which may then indicate that they will form nothing but starved shoots, wholly destitute of flowers. On these, the operation of disbudding can be further employed; for, if they are timely removed, the other flowering shoots will necessarily receive the extra nourishment which they would have expended.

"Finally, there are plants which, from their nature, or from fancy, or for particular purposes, or because they display themselves better in that manner, have to be treated as standard shrubs: that is, are prepared with more or less tall, bare stems, and a bushy, upright, expansive, or drooping head. To train the stems of these nicely often requires much and repeated pruning. But we wish to apply to them the more rapid and suitable process of disbudding. Let the buds be removed ere they have lengthened into branches, and the plants will sooner attain the desired altitude, as well as acquire a greater degree of robustness.

"To put in practice the plan we have been suggesting, we would recommend the use of a very sharp, small knife, instead of the hand. If buds be rubbed off by the finger or thumb, the

operation is frequently ineffectual, and the bark of the plant is commonly injured. When it is done with a suitable knife, however, the entire substance of the bud can be cut off, without at all damaging the shrub or root from which it is taken.

"We hope we have herein said enough to demonstrate the superiority of disbudding to pruning; and that, whenever the former can be effected, it will, in future, be the ordinary method pursued with all exotic plants."

The foregoing is abridged from "*Paxton's Magazine of Botany*," which contains figures, and descriptive of some of the most beautiful plants in the world, generally four in each monthly number, and most of them novelties of the highest value. The work appears to be rapidly superceding the other illustrated periodicals, and is unquestionably the cheapest of them all, if the value received for the money stand for any thing.

WEEKLY JOURNAL OF GARDENING.

THE best rule, for keeping up a succession of crops, is to sow again as soon as the previous sowing has made perfect leaves, beans of the *Windsor* and long pod kinds, and indeed all varieties of the generally called broad beans, should be sown in rows, wide enough apart to have a crop between, one that will clear off well before the beans are their full height: for instance, a row of round leaved *Spinach* will be up, drawn, and cleared away, to make room for other things, and the beans themselves will be off in time to be replaced with cabbages, &c. The rows of beans should be three feet apart.

CELERY.—The main crop should now be sown, if you have not already sown it, in frames. It may be sown in rich soil, a warm situation, and it should be protected by a hand glass, or a proper frame and glass; but it need not have dung heat. Let the soil be raked smooth, the seed be sown thinly, and some of the earth be sifted over it.

LETTUCE.—The most useful and independent of all sallads—for it can be used without any second kind—is one of those subjects which require to be sown in succession many times during the spring and summer, not more than three weeks apart.

PEAS, when sown in succession like beans, should be sown as soon as the previous sowing have begun to open their leaves and been earthed up; therefore in some months there are two sowings, say the first and fourth week.

ONIONS.—If the main crop be not already sown, it must be done immediately. If they were sown, they will be ready this month to be thinned, and all the weeds hoed out.

RADISHES are also proper subjects for succession crops, and may be sown as soon as the rough leaves of the former sowing are developed.

RHUBARB.—Sow some in drills, eighteen inches apart, and drop two or three seeds, every six inches, in the drills. There should be plenty of strong plants raised, for they may be grown in a warm cellar after the roots are once well established, and be used constantly all the year.

SEA KALE.—This delicate and useful vegetable should be grown in every cottage garden. Sow the seed now, in drills, a foot apart, and the seeds three inches apart in the drills. They are to be kept clear of weeds, and watered when the weather is too dry. In the autumn they may be placed in boxes or pots, and be forced with the greatest ease and success in a warm cellar or a kitchen.

CARNATIONS.—Having prepared your compost, and got your pots, size twelve, ready for potting your carnations for bloom, lay potsherds over the holes, and then throw in as many smaller pieces of broken pot as will reach from two to three inches up: half fill the pots then with the compost, now take your small pots, one by one, and knock out the ball with the plants as little disturbed as possible, by knocking the edge of the pot against the edge of your potting bench or table with your hand or fingers so placed as to catch the ball of earth, then take away the crocks or drainage from the bottom, and carefully turning the plants upwards, place the ball in the centre of the pot with both hands, removing some of the soil or adding some more to adjust the height of the surface of the small ball of earth, so as to have it half an inch below the top edge of the pot; now put earth all round and press it down, it will not alter the height of the plant in the pot, and fill up carefully so that the whole surface of the soil shall be but a quarter of an inch below the edge. It may be watered directly, to settle the earth about the roots of the plants, and place them on the stand which was recommended to be made last week. It is desirable to have your sticks prepared as soon as possible, because the sooner they are in their places the better: these sticks were described last week.

PICCOTEES are in every respect subject to the same wants, and require the same treatment.

DAHLIAS.—Re-pot all those which have been struck round the edges of pots, but, as to those which have been struck in the 60-size pots: there is no occasion to shift them until the first pot is full of roots or tubers. Continue to take cuttings from the old tubers, and place them in heat to strike them. Those intended to be grown and bloomed in pots, should be shifted as soon as the roots show against the sides, when the ball is turned out.

HERBS of all kinds may be slipped and planted in shady situations.

SAVOY CABBAGES may be sown the second week.

ASPARAGUS.—If the beds have not already been forked and dressed it must be done directly: care must be taken not to disturb the roots, and to break the soil small.

ARTICHOKE plantations should be forked, and the suckers removed, the latter may be planted out four feet apart, to form new plantations.

This is a most important period to destroy vermin, slugs and snails are most destructive to young Lettuces, they should be looked for morning, noon, and even night, if necessary, water with lime water, sprinkle lime dust about the roots, and use every means that can be devised to rid yourselves of this pest. April 8, 1843.

SOME ACCOUNT OF THE DAHLIA.

Chiefly collected from the Writings of the late J. Sabine, Esq.

It must be acknowledged, that the merit of first carefully attending to, and cultivating these plants, belongs exclusively to the Continental gardeners; for though we received them, originally, almost as soon as the French and Germans, yet, if not lost, they had nearly gone out of notice with us; whilst in France and Germany they had increased as much in number as in beauty; and persons fond of gardening, who visited the Continent, on the return of peace, in 1814, were surprised with the splendour and varieties of the Dahlias in the foreign collections. In the winter of that year several roots were imported into this country, and since that period we have made up for former neglect, as is sufficiently evinced by the splendid exhibitions of these flowers, both in the public and private gardens around London.

The publications which have hitherto appeared on the Dahlia are the following:—1st, *Cavanille's Icones Plantarum quæ, &c., in Hortis (Hispania) hospitantur*, printed at Madrid in 1791, and subsequent years. 2nd, *Memoire sur la culture des Dahlias, &c.* par Mons. Thouin, in the third volume of the *Annales du Museum*, published at Paris in 1804. 3rd, *A Communication from Mr. Buonaiuti, Librarian* (incorrectly styled Gardener) to Lord Holland, on the Dahlias, printed at the end of Macdonald's *Gardener's Dictionary*; this appears to have been written about July, 1806. 4th, *Observations on the different species of Dahlia, &c.*, by Mr. Salisbury, read April, 1808, before the Horticultural Society. 5th, *Observations on the Culture of the Dahlia in the Northern parts of Great Britain*, by Mr. Wedgewood, read before the Horticultural Society in November, 1808, and published, together with the preceding, in the first volume of the Society's Transactions. 6th. The Dahlias are described and noticed by Professor Willdenow, of Berlin, in his *Enumeratio Plantarum Horti Regis Botanici Berolinensis*, printed at Berlin, 1809; and in this he refers to the plates and descriptions of his *Hortus Berolinensis*, in which they had been figured a short time before; and to his edition of the *Species Plantarum* of Linnæus. 7th. *Nate sur les Georgina (Dahlia)*, by Mons. De Cau-

dolle, in the 15th volume of the *Annales la Muséum*, printed in 1810. 8th. Instructions for the cultivation of the Dahlias in France are given by Mons. Dumont de Courset, in *Le Botaniste Cultivateur*. 9th. Figures of different varieties of the Dahlia, with some observations on each, have, at various times, been published in the *Haradus Londinensis*, the *Botanist's Repository*, the *Botanical Magazine*, and the *Botanical Register*, to all of which I shall have occasion hereafter more particularly to refer.

"The genus, as is stated in several of the above works, was named in honour of Dahl, a Swedish botanist: some objections were at first made to this name, under an erroneous impression that it had already been appropriated to another genus; and a further objection was taken to it, from the similarity of its sound to Dalea, a genus so named after our countryman Dale; the first of these objections induced Professor Willdenow, in his *Species Plantarum*, to apply to these plants a new name, that of Georgium (Georgi, an eminent Russian traveller and botanist), which he retained in his other works and in which he was followed by Mons. de Candolle; but the original name seems now to be fully established, and is retained in the new edition of the *Hortus Kewensis*, as well as by the French botanists.

The plants from which three supposed species were described, were sent from the Botanic Garden at Mexico to the Royal Garden at Madrid, in which the one, called by Professor Cavanille, Pinnata, flowered in October, 1789: his Rosea and Coccinea produced flowers a few years afterwards, and all were successfully figured and described by him in his *Icones*—the first in 1781, the two last in 1794; they do not seem, however, to have been successfully treated, for it appears that with him they attained the height of three or four feet only, and did not flower till October. In 1802, plants of each were transferred from Madrid to the Jardin des Plantes at Paris, where they grew so well as to enable Mons. Thouin, in 1804, not only to describe and figure them, but also to treat on their cultivation. In May, 1804, seeds of the three kinds were sent from Madrid, by Lady Holland, to Mr. Buonaiuti in England; from these good plants were produced, one of which the Pinnata, flowered in September following, and was figured by Andrews, in the *Botanist's Repository*. In the succeeding year, plants of the Roses and the Coccinea also flowered at Holland House. Though this importation of the seeds was the most successful as to its produce (for from it nearly all the plants then in our gardens were obtained), yet the original introduction of the first species was (on the authority of the *Hortus Kewensis*) from Spain, in 1789, by the Marchioness of Bute; but it is probable that the plant so introduced was soon after lost, as I do not find any further notice taken of it. The

other species, then called Coccinea, was actually flowered by Mr. John Frazer, at Chelsea, in June, 1803, when it was figured in the *Botanical Magazine*; this plant afterwards perished. Mr. Frazer is said to have obtained it from France in 1802, the same year in which it was introduced from Spain into the French gardens. It also appears, that in the autumn of 1803, Mr. Woodford flowered at Vauxhall a plant of Cavanille's Rosea, which he had obtained from Paris; so that, independently of one introduced by the Marchioness of Bute, in 1789, it seems that both species had flowered in this country before the seeds were transmitted by Lady Holland.

At Madrid they were a long time in the Royal Garden without any indications of change; and it will be seen that after they were spread through Europe, some years elapsed before any extensive increase of variation took place.

Mons. De Candolle, I am informed, obtained from Madrid the plants which he cultivated at Montpellier, about the same time they were sent to Paris. His *Memoir* was printed in 1810, and he therein describes only five varieties of superflua, viz. Rubra, Purpurea, Lilacina, Pallida, and Flavescent, and three varieties of Frutranæa, viz.—Coccinea, Crocea, and Flava; he probably, when he wrote had not obtained any double flowers, though he evidently expected such would soon be produced.

Mons. Otto, as early as 1800, obtained from Dresden, for the Royal Garden at Berlin, a plant of the Pallida of the *Hortus Berolinensis*; and in 1802, a plant of the Purpurea, of the same work, was sent to him from Madrid; but he had no new varieties from his own seed till 1806.

The first introduction of the Dahlia into the Royal Gardens at Berlin has been already noticed, as having occurred between 1800 and 1805. Mons. Otto has informed me that the chief varieties were raised between 1809 and 1817, but that the first which showed themselves were produced in 1806 and 1807. About 1813 he began to pay more particular attention to their cultivation, and improved their kinds by cross impregnations of the stigmata of the florets. The first double flower he possessed came from Stuttgart; but a complete double one of his own flowered in 1809; it was dark red, exactly similar to that from Stuttgart; this had at first blown only semi-double. Three more double ones were raised in 1815 and 1816, and he has, at present, in all, six with double flowers. A pure white single one was given to him in 1809, and in 1810 he raised another white one himself. He mentions that in the Catalogues of the Nurseries at Berlin, from 80 to 100 sorts are enumerated for sale, but he considers the really good ones to be about thirty.

In our own country, we had an early promise of great success, and had we hit upon the right plan of management, in keeping the plants

when produced, I do not doubt but we should have been equally successful as the Continental gardeners in obtaining varieties. Mr. Buonaiuti saved seeds from the plants he raised in 1804, the produce of which seeds he states to have given him, in the succeeding year, nine varieties of that which was called *Pinnata*, two of which were double, one with lilac and the other with dark purple flowers; of the single flowered plants, some were certainly dark coloured, four figures were published from them at the time: the paler coloured varieties were chiefly considered as belonging to what was then called *Rosea*, he had also two varieties of *Coccinea*, the original deep-coloured one and a paler one, which, though called by him *Crocata*, was the pale yellow variety, as is apparent from the figure of it, published in the *Paradisus Londinensis*. Mr. Salisbury also obtained several varieties from the seeds which he received from Holland House in 1806; these he had particularly noticed in his paper, printed in the first volume of the *Transactions of the Horticultural Society*. In the fifth volume of the second edition of the *Hortus Kewensis*, which was published in 1813, the varieties of *Superflua*, there named, are *Purpurea*, *Lilacina*, and *Nana*, the latter being taken from a double variety, figured in Andrew's *Botanical Repository*, but which is certainly not particularly entitled to be considered as a dwarf plant. No varieties of *Frustranea* are given in the *Hortus Kewensis*.

Mons. De Candolle, in his *Essay on the Genus*, has observed, that it is not probable we shall ever see a blue one, since the variation is from purple to yellow. He considers blue and yellow to be the fundamental types of the colours of flowers, and that they mutually exclude each other; yellows pass readily into red or white, but never into blue; and in like manner blue flowers are changed, by cultivation, into red and white, but never into yellow.

EFFECTS OF COLOUR IN PLANTING SMALL BEDS OF FLOWERS.

SCARLET and blue, produced by the *Verbena*, *Milindres*, and the *Nemophila Insignis*, have a very beautiful effect. The small cuttings of *Verbena*, which have been struck, and kept in frames all the winter, may be planted a foot apart all over the bed, and the *Nemophila Insignis* should be planted between them. The *Verbena*, however should, in all cases, form the outline of the bed: thus, let the *Verbena* be represented by the stars, in the following example, and the *Nemophila* by the circles; the *Verbena* will soon spread, and may be made cover the bed everywhere but where the *Nemophila* stands, and which will form so many

bright blue patches among the brilliant scarlet. Thus—

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ORANGE and BLUE may be produced with the *Erysium* and *Lupinus nanus*, or the *Eschscholtzia* and *Convolvulus minor*. The former mixture being handsome and dwarf, the latter from a foot to a foot and a half high, and calculated for large beds.

WHITE and PURPLE may be produced by the *Candy Tuft* alone, which form a solid mass of flowers all over the surface. *Collinsia Bicolor* forms a beautiful clump of itself, there being a bright blue for the leading colour, but quite white enough to relieve it, and the flowers coming in handsome spikes, but very dwarf, make a rich appearance.

PINK, BLUE, and WHITE, may be found in the dwarf *Rocket Larkspur* in perfection: the blues being from dark to light, in almost every shade, and the pink also being varied from the paleness of the *Maidens Blush Rose* to almost the deepness of the damask; and the white is a great relief among the various shades of pink and blue.

Other diversities of colour may be obtained by mixing various plants, alike in habit, or at least in height, and blooming at the same time. The *Ten Week Stock*, now to be had in endless variety, make very handsome clumps, either in the separate and distinct colours, or in mixture. *Pansies* also are brilliant subjects for clumps or small beds, whether grouped or in distinct varieties, one kind only in a bed: but a bed all white, or all yellow, looks heavy. For tall mixed flowers the *Phloxes* are very beautiful, and the scarlet *Lychnis*, especially the double, adds great brilliancy to a fancy garden for it is as bright as the *Verbena*; and while that trails and blooms on the ground, forming a carpet, as it were, of rich flowers, the *Lychnis* yields as brilliant a surface, from two feet to three feet from the ground. By studying a little the effect of various colours, mixed or near each other in masses, a garden may be kept bright and cheerful from Spring till Autumn; whereas, if this effect be not considered a little, while sowing or planting, you will have flowers going out of bloom, that should be succeeded by others, as much contrasted, and in the absence of which, the principal features of the garden will be found all of one hue. There is room to say a good deal on this subject.

Encyclopædia of Flowers.



CULTURE OF THE RHODODENDRON.

THE Rhododendron is one of those interesting plants which have yielded most willingly to the system of hybridization, or cross breeding, and has more than any other contributed to the overthrow of the miserable objections of botanists. The narrow minds and circumscribed notions of professors induced sundry tirades against cross-breeding, and had there not been men of great perseverance and common sense to repudiate their trumpery doctrines, we might have been, to this day, paying vast respect to those distinctions which they choose to make, and instead of producing scores of magnificent varieties, blindly following those remarkable silly rules, which went to preserve each species distinct. The triumphs achieved by hybridizing may be best explained by showing that there were certain known varieties of the Rhododendron which botanists called species: some are hardy as oak, others as tender as a greenhouse plant. We had the *Ponticum*, or common Rhododendron, which will stand our hardest winters; and the *Arboreum*, which is but a greenhouse plant; the *Maximum*, hardy; and *Arboreum Album*, a greenhouse. In fact there were many very beautiful varieties, too tender for our climate, and yet splendid compared with our hardy kinds. The hardy varieties were white or common purple; the petals of the flowers pointed, and in all respects poor and miserable in appearance. The foliage too, as compared with that of the more tender kinds, was as contemptible as the flowers, and the inferiority was in all respects conspicuous.

In Miller's time there were but two species known by him, though he says there were others in the East and in America. The two noticed by him are *Hirsutum* and *Ferruginum*, both natives of the Alps, and very hardy, though difficult in his day to grow in British gardens, because, being indigenous to rocky soils, they did not willingly yield to the ordinary means of culture; and though both grow now as well as any of the tribe, because gardeners know how

to manage them, very little was done with them at the period we mention. Perhaps one of the best, if not quite the best of the hardy kinds, was *Catawbiensis*, for its foliage was rich and glossy, and the flowers were large and handsome. But if we could enumerate fifty of the species, so called, it would be in vain we endeavoured to find any hardy one half so magnificent as those which were imported from warmer climes. The Rhododendron *Arboreum* was almost a scarlet, and we had nothing among the hardy kinds at all approaching that colour. But thanks to an enlightened class of gardeners (whose respect for botany did not blind them to the advantages of hybridizing, and who treated the professor's denunciations against destroying the distinctions, which marked the species, with no more consideration than they were worth), some of the hardy kinds, which had little to recommend them beyond the fact that they were hardy, were impregnated with the tender ones, whose better foliage and splendid flowers rendered them valuable and desirable, but whose tender habits precluded us from planting them out of doors; a new race was produced, which had the superb flowers and vastly improved habits of the tender kinds, but which stood our ordinary winter like the commoner varieties, and rendered this class of flowers the brightest ornaments of a shrubbery. Nor did it stop here, for the crosses were diversified a hundred ways, and those who are stupid enough to fret over the confusion or the destruction of species, have enough to be sorry for, while they who look for improvement, and for the triumph of hybridization, may exult over a class of plants which are scarcely equalled by any other we possess. But gardeners did not stop at hybridizing the Rhododendron only: the *Azalia* was considered by many to be another family, but practical gardeners thought otherwise, and began to try the effect of cross-breeding between them and Rhododendrons. Here was opened a still wider field, for success attended the operation, and a

new race of flowers was the consequence, until in fact the original species, with few exceptions, sink into insignificance when compared with some of the magnificent hybrids which now fill the best collections.

The various modes of raising or propagating the *Rhododendron* are, from seeds, cuttings, layers, buds, and, that which may be regarded as purely accidental, the lower branches, with a portion below the surface of the soil, rooting of themselves, and affording the opportunity of what might be called parting of the roots, or separating those branches which have struck root. First, then, we must, looking at the season, treat the subject as if we were buying a stock for the first time, and, therefore, we will suppose the reader to possess a small but choice collection of those which differ most from each other. The best way to obtain these is to visit nurseries where these are made a considerable feature, such as, Smith's at Norbiton, Rollisson's at Tooting, Low's at Clapton, or Knight's in the King's Road, and there purchase a variety from your own observation of the bloom, or from their recommendation. Suppose we begin with hardy ones only, or hybrids raised from hardy ones. *Catawbiense* is one of the best, and by selecting half a dozen of these from a large stock you will in all probability obtain several colours. *Campanulatum* and *Caucasicum* are both hardy, but not free bloomers, and there are several kinds of hybrid *Rhododendrons* perfectly hardy, among which, the most remarkable is *R. Pulcherrimum*. Mr. Waterer, of Knaphill, in Surrey, was the first to raise this variety from the seeds of *R. Caucasicum*, the stigmas of which had been fertilized by the pollen of *R. Arboreum*. It has since been raised in great abundance by Messrs. Cunningham, nurserymen, Liverpool, and by Mr. Cunningham, Comely-bank, Edinburgh, as well as by various other cultivators. We are informed by Mr. Holmes, of the Handsworth nursery, near Sheffield, that in the nursery of Comely-bank there are beds of this variety containing upwards of a thousand plants, and at the time he saw them the ground was covered with snow, and many of the unexpanded blossoms of the most brilliant scarlet were then peeping through the surface, forming, with the whiteness of the snow, a remarkable and striking contrast. What is still more remarkable in this *Rhododendron*, is its constancy; hundreds of plants obtained from seed have been seen in flower without the slightest variation either in flower or foliage. This is an unusual feature in the genus, and can only be accounted for from the circumstance of its being the offspring of *R. Caucasicum*, which reproduces itself without variation; and even when submitted to the influence of cross fertilization, its progeny present an uniformity of appearance and specific character rarely met with in the seminal pro-

duction of natural species. It is the most splendid hardy *Rhododendron* that we have yet seen, and is further worthy of notice on account of the early period of growth at which its flowers are produced: plants are often seen bearing clusters of rosy scarlet blossoms whilst under six or eight inches high. Like all other productions which originate in various hands, it bears various names, but is so easily described, that there is no difficulty about getting the right under some name or other. Now, *Catawbiense* is altogether as sportive as *Pulcherrimum* is constant, and without seeing any variety in the foliage or habit, you may find flowers of many distinct shades and colours. Supposing you to be possessed of such a collection as presents great contrast, let these be bloomed altogether, and if you have the *Arboreum* with scarlet and white, the *Atropurpureum*, which is the darkest we have, and Smith's magnificent yellow variety, let there be added to these three or four of the best hardy *Azalias*, which are of the same genus, and besides gratifying the sight while in flower, they will hardly fail to seed if they have air on mild days.

MANAGEMENT OF THE PLANTS FOR SEEDING.

We have now supposed the plants to have been bought in pots, and therefore to have required no further attention till they have bloomed. The bloom, however, being over, the plants may be placed in an ordinary pit, always shaded from the violent heat of the sun, but having all the air and rain, and abundance of water, during the growth of the young wood, and the swelling of the seed pods, and by attention at this period a succession of bloom buds will be secured for the next year, whereas, if the watering were neglected, or they were allowed to be burned up with the mid-day sun, the growth of the young wood would be checked, and the failure of bloom for the next season almost a certainty.

MANAGEMENT OF PLANTS FOR SHOW.

As soon as the bloom is off, the seed pods should be removed by cutting off the footstalks with a pair of scissors as close as conveniently may be. The object of this is, to throw the whole strength of the plant into the young wood, which would be more robust if there were no seed ripened, or allowed to swell; in other respects the treatment should be the same as if seed were to be saved.

WINTER TREATMENT.

Plants are always more tender in pots than in the open ground, from this cause—the roots always make for the side of the pot, which a very moderate frost will penetrate, and of course affect many of the spongy, soft points, and if it do not kill it, so deprives it of nourishment, as to cause the leaves to turn brown at the edges,

and the plant altogether to grow sickly, whereas, if a plant is in the ground the frost does not reach the points of the small roots one season in twenty. The best way to treat plants in pots is, to plunge them to the rims in something or other, say tan, ashes, gravel, or even common soil, but the objection to common soil is, that the worms, of which it is generally full, get into the pots, and disturb the roots. This plunging of the pots preserves the roots of the plant from frost, and the plant itself will not suffer because it is dormant during the winter months. But the fault of some, even hardy plants, is, that they start early into growth, and there is no plant sufficiently hardy in its young shoots to stand much frost.

BLOOMING PLANTS FOR EXHIBITION.

The plants, whether they have been allowed to run to seed or not, will have set their blooms before the winter sets in, and some will be forwarder than others. Those which have swelled tolerably well may be kept in the frame, and have no more water than will just keep the mould they are in damp. Those which have not swelled their buds so well may be removed to the greenhouse, and be still watered, and kept upon the move, until their buds have, as it were, overtaken the others. They may then be taken back to the pit, and kept like the others at rest, with very little water, all the air they can have, and no hot sun. As the blooming time approaches, as they will all be wanted to bloom at once, the only steps that can be taken to regulate them, is to encourage the advance of the backward ones by giving them the benefit of the most sunny part of the greenhouse, and to retard the forward ones by keeping them cool, and without sun, and let them have air night and day. By observing their growth, and the swelling of the buds in time, varieties which are inclined to come at very different seasons may be brought much nearer together, and sometimes quite at the same period. At all events, out of a tolerably good collection, many of different colours and habits can be brought together to form a good show.

SEED SAVING AND SOWING.

THE seed vessels must be gathered as soon as they are ripe, and before they burst, for the seed is much smaller than even grains of sand; it is like so much snuff, therefore, when they are gathered, let them lie in a drawer, in the stove or greenhouse, or a sunny window, to burst and give out their seed; or, if we chose to be at the trouble, open the vessels and take it out—this seed is difficult to sow thin enough, therefore, the best way is to mix up with it ten or twenty times its quantity of the smallest sand. Then take seed pans, with good drainage to them, and fill with the following compost:—one half good loam, formed of the top or turf spit of an old

meadow, sifted through a coarse sieve, the other half the best peat or bog, such as is formed of the half decayed fibres, and may be had off several commons, broken into pieces, and rubbed through the same sieve. These ought to be taken, measure for measure, after sifted; they must be well incorporated and run through the sieve after mixing. Let the pans be filled with compost, and by knocking the bottom of the pan on the potting table, or bench, on which you are at work, the compost will be solid enough without pressing: level it very nicely, and take your sand and seed as mixed, and scatter it thinly over the surface of the pans. Now, with a fine sieve, sift a little of the compost on the seeds very evenly, and only just enough to cover them as slightly as possible. Take in your hand, a brush about the texture and strength of a clothes brush, dip it in water, turn it hairs upwards, pointing at the seeds, draw your hand along the hairs towards you, and they will throw off an almost imperceptible shower of moisture, by means of which the whole surface can be fairly wetted without disturbing a seed or a grain of the compost. Place the pans in the shade under glass, water them after the same fashion, whenever they are getting dry, for dry they never must be after they are once sown. Read, of the Regents Circus, London, has, however, invented a syringe which throws a shower as fine as dew, and which would water a hundred pans in ten minutes, besides being useful to throw stronger showers on plants, or forced showers to wash off vermin from rose trees, vines, and wall fruit, and we prefer one of them to any kind of makeshift, but we have to remark that no watering pot can be fine enough to water the seeds with, and recourse must be had to the brush, as the most certain way, unless the patent syringe is used. When these seedlings are large enough to lay hold of conveniently, say they have four good leaves, they should be pricked out into other pans, of the same kind of compost, just one inch a part all over them, but they must be carefully raised from the seed pan without disturbing the surface to hurt the more backward seedlings, and the pan may be put back to its place, for the seeds will continue coming up for a considerable time. When pricked out, they should be watered.

There must be as much care taken of these seedlings, after being picked out, as there was in the seed pan: they must be watered regularly, and, though in the greenhouse, kept under hand-glasses for a few days, until re-established, after which they may be removed to a cold frame, or put out of doors; be shaded from the mid-day sun, weeded regularly, and carefully tended, until they have grown to touch each other. The plants, though in the young state, will make their growth, and are completely at rest a while—that is, they will make a push, form a bud at the end of the branch, which will

keep dormant for a while. They should now be potted in 60-sized pots, in the same kind of soil as they have been raised in. They have now only to be kept from getting dry, which in such small pots requires much care: the best and easiest way is to plunge the pots to the rim in ashes or some other medium, and still have frames over them for the purpose of preserving them from excessive wet, heat, and cold. When they have perfected a second growth, and are resting, shift them into 48-sized pots, and treat them as before; and so continue shifting, from size to size, until they flower, when, if there be any thing remarkable, which you desire to propagate, the most simple method of doing so is by grafting.

PROPAGATION BY GRAFTING.

Get young plants of the common *Ponticum*, which is the hardiest and cheapest you can get, let these be potted and established well before you want to use them. Cut them down within three inches of the pot; form the upper end into a wedge shape, take off the branch, or, as it is called when used for grafting, the graft or scion, split it at the bottom, and cut the inside of the slit, sloping each way so as to fit the wedge-shaped end of the stock; fit these together so that the bark of each shall touch and leave no vacancy, if possible, all over; but as the stock may be, and often is bigger round than the graft or scion that is to be grafted on it, let the bark fit perfect on one side and fall short on the other, for the graft will soon grow and cover the other side; tie it together neatly with matting, and cover it with the following composition:—half a pound of bees'-wax, half a pound rosin, and a small bit of candle tallow—say as large as half an inch of a common candle—warm the two former in a pipkin, and when melted, add the tallow, and stir it together. The object is to have it melt or keep in fusion, without being hot enough to burn the plant; and when cool, to be hard enough to keep out the weather and not run away. Let it cool until it is the thickness of treacle, and see if it will scald you. If not, it is right one way; but to complete the trial, let it quite cool, and see if it be firm enough to stick on where it is placed: it should be harder than bees'-wax, but not so hard as rosin—tallow softens it if too hard, rosin hardens it if too soft. Let this composition be warmed in the pot, by the side of a fire, whenever it is wanted, and not heated more than is necessary. With a small brush, such as painters use to paint window sashes, lay on the composition all over the join of the graft, so as to cover the tie completely. The plants should be placed, after the operation in a garden frame, kept from the air for a day or two, and shaded altogether from the sun. The grafts will not fail to take and make good plants, if they have been quickly and neatly fitted, for the juices of the plant and graft

must not have time to dry before they are fitted and tied.

PROPAGATION BY ENARCHING.

This consists of bringing the two plants together, and so fixing them, that a branch of the one to be propagated could be tied to the stock, and first cutting the stock on one side half way through, and then cutting the branch intended to be taken off half way through, then tying the two together so neatly that on one side at least the barks shall touch, cover this with the grafting wax, as in the case of grafting, and they will take. When the union is perfect, cut the piece which is grafted to the stock away from its own plant, and cut all the stock away but that to which the graft is attached, when you have the new variety on the common stock.

PROPAGATION BY CUTTINGS.

This is not always successful; but as straggling branches may spoil the look of a plant, and are pruned off at once; let this be done only when the growth of the season's wood is completed and not ripened, take these off at the bottom of the new wood, get a large sized pot, two-thirds or more full of the compost, so as to leave two inches for sand; plant the cuttings in so as to only just enter the compost; cover with a glass that comes just inside the rim of the pot and presses the sand; let the pot be placed in a frame, with a trifling bottom heat, or in a common propagating house; or for want of a better accommodation, in a greenhouse or cold garden frame. The glass must be wiped clean every morning, and the sand kept moist. Neglect of watering is fatal. When they are struck they must be treated as seedlings are treated.

PROPAGATION BY LAYERS.

This consists in bending down and pegging the under branches beneath the surface, and bringing the growing end above again. If this be done one autumn they will be rooted by the next, but the rooting is hastened by cutting a slit underneath the branch, just below an eye, and slitting it an inch or so upwards towards the top; it must not go more than half through the stem. When cut off the next autumn, they may be potted or planted in beds, or be planted at once in the shrubbery, where they are to remain.

PROPAGATION BY BUDDING.

To the professional Florist the process of budding offers some temptation, with a new and valuable sort, for there are always more buds than branches, but it is not advisable. In this operation the bud, and the small piece of wood attached to it, is fitted into a place cut for it, and fastened there as in grafting; and it matters but little which way, so that two things be observed—first, that the fit of the piece with the

bud into the stock is very exact; and, secondly, that part of the stock be, if possible, left growing above the place where the eye is inserted; the composition is to be laid on afterwards, the same as it is in the case of grafting, for the bud will grow right through it if it grow at all. When the bud has taken well, and begun to grow, the bandage and composition should be taken off carefully. It is easily removed by cutting a slit downwards, just through the composition and matting, but being exact, and not cutting into the plant itself.

TO TRAIN THEM INTO STANDARDS.

A standard means a tree with a bare stem up to a certain height, and then a head of branches and foliage. Old and straggling plants that have become bare at the bottom are always easily converted into standards, by selecting the longest bare stem, cutting all the rest of the plant away, and pruning the head into shape, and as the stem will most likely be growing out sloping instead of upright, you have only to dig up the plant, and place it upright when you replant it. When you are desirous of raising standards, the best way is to graft your new varieties on the largest stem you can find of the common *Rhododendron Ponticum*, and if you cannot get this any other way, form it out of some straggling plant, only instead of saving the head of it as if you wanted a standard of the same kind, cut off all the branches, and graft on the main stem.

HYBRIDIZING.

We have already explained that hybridizing is the removing of the pollen of one plant or flower to the pistil of another, and thus artificially impregnating them. By the plan which we first mentioned, that of merely growing all the varieties together, the changes would be natural and very uncertain; the tender might be impregnated with the hardy, or the hardy with the tender, or both; the white flower might be fertilized with the red, or the red with the white; but there would be no certainty about any one distinction, except that, generally speaking, the seed saved from the hardy ones would give us hardy plants, though they were impregnated with the tender ones, but if we wish to make crosses which are distinct, or have any fancy for particular experiments, the two plants intended to be crossed should be brought into bloom at the same time, and those, to be at all a desirable cross, must be widely different in colour, or form, or habit, or some peculiarity which it may be desirable to combine in one.

GENERAL REMARKS.

We have given the mode of raising from seed, when you are saving seed indiscriminately, and do not know whether the offspring will be tender or hardy; but if care is taken to save the seeds

of *Caucasicum*, *Catawbiense*, *Campanulatum*, separate from the tender ones, one half the care we have required while they are young may be saved. For instance, they may be taken from the seed pans where they were pricked out, and planted at once into a bed of the compost we have mentioned, six inches apart every way, and kept merely weeded and watered two whole seasons, while those of the tender kinds may be treated as we recommended for all. After hardy ones have stood two years in a bed, they may be shifted to another in which the compost is a foot deep, and be planted a foot apart; here they may stay two seasons more, bloom or not bloom, but most likely some will flower. The removal after this may be into rows, two feet apart, and the plants eighteen inches apart in the row. There to stand till selected for their novelty or beauty, to pot or propagate, as may be most desirable.

RHODODENDRON PONTICUM,

Is, as we have observed, the most common of all, and is used as a stock for all others; the bloom is a five parted single petal, which looks like five separate-pointed narrow petals, and the flowers come in bunches at the ends of the shoots. Those in the *Ponticum* are loose and ugly, though we have seen seedlings from *Ponticum* very much improved. In our figure will be seen one of the moderately good single pips of the *Ponticum*, which is by no means approaching a perfect flower; there is also a pip of a more perfect one, to show what it should be. Of course we do not say there are any such, but we venture, nevertheless, to say, that there are many which have made great advances towards it; and there is not the least doubt that perfection will be so nearly attained, by and by, that the *Ponticum* will be thrown out altogether except for stocks (like the single *Camellia*) to graft other varieties on, for which it is perhaps the best of all the sorts, as well as the cheapest.

RHODODENDRON ARBOREUM.

This is one of the Nepal species, and certainly the handsomest of the tree tribes. It generally attains the height of twenty feet, and presents very large branches of dark scarlet or crimson flowers, which have the fine appearance and even hue of velvet. Honey is secreted by these flowers in great abundance: indeed when the tree is shaken, the drops of liquid sweetness fall from it in quick succession. The leaves are large and silvery beneath.

RHODODENDRON MAXIMUM.

This variety, in America, attains a height of from twelve to sixteen feet. In this country, however, it has not been so successfully treated as to increase in size, or flower at all, with freedom. A number of years elapsed since its introduction before it exhibited a single flower.

In its native country it is always observed growing upon rocks, near water, and it is reasonable to suppose that a locality of the same character would suit it in its new home. The leaves of *R. Maximum*, one of a pale yellowish green, and they generally droop, as if they languished for water.

RHODODENDRON CATAWBIENSIS.

Another of the American species, and one which has shown much hardiness. In June and August it flowers abundantly. In height it is seldom more than four feet, but it presents a pleasing healthy looking bush, covered entirely with flowers. It may be observed, that the hybrids between this species and the Nepaul *Rhododendron* are exceedingly elegant.

RHODODENDRON, CHRYSANTHEMUM, FERRUGINEUM, AND HIRSUTUM.

These are chief dwarf species of the *Rhododendron*, but have some aspects of interest. It is true they rarely exceed a foot in height, and some of them attain only six inches. They present a great variety of colours—yellow, rose-coloured, purple, and white.

RHODODENDRON DAURICUM.

This is a favourite species on many accounts. It flowers at a very early season, and its produce is highly ornamental. The flowers generally appear before the leaves, though there is a variety that is evergreen. They may be looked for from December to March.

RHODODENDRON ALBIFLORUM.

A recently introduced specimen from North America. Its flowers are white, and appear in June.

RHODODENDRON ATTA-CLARENSE.

An English hybrid, which has some admirers. The flowers are crimson, and show pretty freely in May.

RHODODENDRON ANTHROPOGON,

A frame shrub of Nepaul, brought here in 1820. It has purple flowers about the end of May.

RHODODENDRON UNDULATUM AND RHODODENDRON VENUSTUM.

These are both hybrids, and very hardy. The first produces a rich pink flower in April; and the second, pink and spotted flowers, about a month earlier.

RHODODENDRON BARTATUM.

There is little known of this variety. It is a native of Nepaul; first seen here in 1829. It is hardy, but its flowers have not very distinctly been remarked.

RHODODENDRON CAMPANULATUM.

This is also a native of Nepaul, of the same date of introduction as the former. It produces a pale pink flower in May.

RHODODENDRON CAMTCHATICUM.

An early introduction from Khamschatka (1802). It has proved itself tolerably hardy, and flowers at rather uncertain periods. It shows purple blossoms.

RHODODENDRON CATESBÆI.

Introduced thirty years ago: hardy like most of the North American varieties. It flowers purple about May.

RHODODENDRON CAUCASICUM.

This native of the Caucasus has been amongst the varieties nearly fifty years. It flowers as late as August; but its produce, purple, is very acceptable. It has shown itself to be tolerably hardy.

RHODODENDRON, PULCHERRIMUM, AND RHODODENDRON SHAMENEUM.

Both hybrids of very recent appearance. They flower as early as March: the first a dappled red, and the second a pale rose. They are hardy and easy of treatment.

RHODODENDRON CHAMÆCISTUS.

This hardy evergreen variety is an importation from Austria, as early as 1780. It produces a pale purple flower in May.

RHODODENDRON FAVARÆ.

A hardy species, which acknowledges China, from whence it migrated in 1830. It flowers very early, generally in March, and its produce is lilac.

RHODODENDRON HIRSUTUM.

An old introduction from Switzerland, which in nearly two centuries has not much advanced. It produces, however, a fair scarlet flower in June, and is found tolerably hardy.

RHODODENDRON LAPPONICUM.

This is a frame shrub of Lapland, first seen about twenty years ago. Its flowers are common, and are seen in April.

RHODODENDRON LEPIDOTUM.

A variety which flowers at uncertain periods. When it does show, the colour is rose. It is a native of Nepaul.

RHODODENDRON PUNCTATUM.

One of the earliest importations from North America; tolerably hardy; flowering pink in July.

RHODODENDRON PERSHII.

A white variety of the Rhododendron from North Jersey, whence it was introduced in 1811. Its produce is late, July or August.

RHODODENDRON RHODORA.

North American deciduous shrub, of very early introduction. It is hardy, and prospers with ordinary care. The flowers are pale purple, and appear in May.

RHODODENDRON AZALIA.

Azalias are classed with the Rhododendron. This was not the opinion of Linnæus, and his is still retained by many, notwithstanding but one little trailing plant, a native of Scotland, remains of the once noble genus, Azalia, of the great botanist. We now catalogue no fewer than one hundred and thirty varieties. Those of North American introduction are the most numerous. These are deciduous shrubs, flowering generally in June, and rarely a month later. They are all hardy, and their flowers include red, scarlet, orange, yellow, and white, sometimes with an interspersed colour. The Chinese varieties belong to the greenhouse, very few of them are hardy. They appear from May to July, and exhibit orange, brown, purple, and some striped flowers. The Azalia Indica of the last class is a greenhouse plant of considerable beauty. It is an elegant object both in summer and winter. In the finer seasons it should stand out in the open air, in a tolerably shaded situation, and at the end of the year in a cool part of the greenhouse. There are a few deciduous varieties of the Azalia which are old importations from Turkey. The chief of these is the Azalia Pontica, which shows a yellow flower in June.

Miller mentions the two now least valued as the only ones cultivated so late as 1768, thus:

This genus of plants is ranged in the first section of Linnæus's tenth class, which contains those plants whose flowers have ten stamina and one style.

The species are,

1. Rhododendron (*Hirsutum*) foliis ciliatus nudis, corollis infundibuliformibus. Lin. Sp. Plant. 292. *Rosebay with naked hairy leaves, and funnel-shaped petals.* Chamærhododendros Alpina, villosa. Tourn. Inst. R. H. 604. *Hairy Alpine Dwarf Rose-bay.*

2. Rhododendron (*Feyrugineum*) foliis glabris, subtus leprosis, corollis infundibuliformibus. Lin. Sp. Plant. 392. *Rose-bay with smooth leaves, which are hairy on their under side, and funnel-shaped petals.* Chamærhododendros Alpina glabra. Tourn. Inst. R. H. 604. *Smooth Alpine Dwarf Rose-bay.*

The first sort grows naturally on the Alps, and also upon several mountains in Italy. This is a low shrub, which seldom rises two feet high,

sending out many short ligneous branches, covered with a light brown bark, and garnished closely with oval spear-shaped leaves, about half an inch long, and a quarter of an inch broad, sitting pretty close to the branches; they are entire, and have a great number of fine iron-coloured hairs on their edges and under side. The flowers are produced in bunches at the end of the branches; they have one funnel-shaped petal; the tube is about half an inch long; the brim is cut into five obtuse segments, which spread half open; they are of a pale red colour, and have ten stamina in each, which are the length of the tube; after the flowers are past, the germen in the centre turns to an oval capsule, with five cells, filled with small seeds. It flowers in May, and the seeds ripen in August.

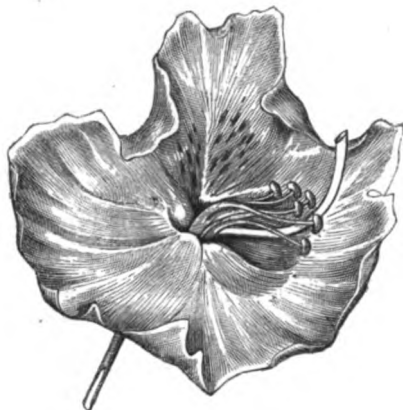
The second sort grows naturally on the Alps and Appenines; this rises with a shrubby stalk, near three feet high, sending out many irregular branches, covered with a purplish bark, and closely garnished with smooth spear-shaped leaves, an inch and a half long, and half an inch broad in the middle; they are entire, and their borders are reflexed backward; the upper side is of a light lucid green, and their under side of an iron colour; they are placed all round the branches without any order. The flowers are produced in round bunches at the end of the branches; they are funnel-shaped, having short tubes, which are cut into five obtuse segments at the brim, which spread a little open; they are of a pale rose-colour, and make a good appearance. This sort flowers in June, but does not ripen seeds here.

There are some other species of this genus which grow naturally in the eastern countries, and others are natives of America, but the two sorts here mentioned are all I have seen in the English gardens; and these are difficult to propagate and preserve in gardens, for they grow naturally upon barren rocky soils, and in cold situations, where they are covered with snow great part of the winter; so that when they are planted in better ground, they do not thrive, and for want of their usual covering of snow in winter, they are frequently killed by frost; but could these plants be tamed, and propagated in plenty, they would be great ornaments to the gardens.

They are propagated by seeds, but these are so very small, that if they are covered deep, they will not grow. The seeds should be sown as soon as possible after they are ripe, either in shady borders or pots filled with fresh gentle loamy earth, and very lightly covered with a little fine earth; then the pots should be plunged up to their rims in a shady border, and in hard frost they should be covered with bell or hand-glasses, taking them off in mild weather. If these seeds are sown early in autumn, the plants will come up the following spring; these must be kept shaded from the sun, especially the first

summer, and duly refreshed with water, and in autumn following, they may be transplanted to a shady situation and on a loamy soil, covering the ground about the roots with moss, which will guard them from frost in winter, and keep the ground moist in summer.

The American kinds, which are deciduous, should be treated precisely the same as the *Rhododendron Ponticum*, as they are all very hardy; but the *Azalia Indica* requires the care bestowed on the tender varieties.



A Flower of the *Rhododendron* as now found in many varieties.

PROPERTIES OF THE RHODODENDRON.

The flower should be circular and campanulated, or hollow like a globular cup. The five divisions of the petal should be concealed by means of the lapping over.—it should be large.

The petal should be thick, smooth at the edge, stiff, and hold its shape well.

The truss of blooms should be pyramidal or dome-shaped, stand clear of the foliage, the flower compact, touching, but not crowding each other—foot stalks stiff and elastic.

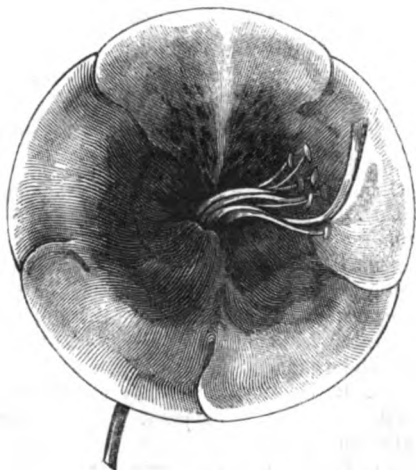
The colour should be brilliant, the spots distinct and contrasted, and stand well without fading.

The plant should be bushy, the foliage bright

clear green, large, and disposed all round the branch, especially round the flower, the stems should be well covered with leaves, and the bloom should be abundant.

It should not bloom until the middle of May if hardy, as by beginning before the frosts have gone, the blooms are always spoiled.

The following would be considered great faults :—The petals pointed, thin, notchy, frilled, or crumpled; the divisions narrow, the flowers loose in the truss, the foot stalks weak and too long, the colour dull, the spots not bold nor strong; the foliage narrow, dull, and far apart; the habit lanky, plant straggling and ugly.



A Flower of the *Rhododendron* as it ought to be.

DEFICIENCY OF GARDEN DICTIONARIES.

If we quarrel with the present Dictionaries of Plants, it is because they are all written for people who know a good deal, instead of those who know nothing. What boots it that a private individual, who has just installed himself in a suburban garden, can find that some particular plant, that he never heard of before, was of this class or that order, or that it came from the Brazils, or the Cape, or the Indies? He would rather read that it was a pretty blue flower, the form of a bell, or of a star; or a scarlet flower, the shape of a daisy, or a butter flower: that it would grow in a common garden, one foot or three feet high, and so forth. He cares no more about Monagynias or Heptandryas than he cares about who is Grand Sultan; and the Dictionaries, which are all too learned for him, and thousands besides him, give all the information but that which he really wants. We are about to try our hand at a Dictionary for the Million—"The Amateur Gardener's Companion," one that he can turn to when he has a packet of seeds, or a batch of young plants, to see what kind of produce, or bloom, or growth, he is to expect, and how large the place must be to hold it—whether it blooms in one year or seven—whether it is to be a timber tree, a dwarf shrub, or a border flower. It is all very fine for our learned classes to say what a fool a man must be not to know that a *Quercus* was an oak; but he might, if he were a shoemaker, say with equal truth, what a fool such a learned man must be not to know what "closing" is; or, if a sailor, what a fool a botanist must be not to know "how to box the compass," or where is "abaft the binnacle." If we are to make gardening books useful to the crowd, we must write them so that the crowd can understand them; and we shall most assuredly try our hand at such a book, in connection with that which is admitted to be a useful volume, THE GARDENER AND PRACTICAL FLORIST.

VARIETIES AND SPECIES.

IN an article on the Dahlia, the author gave a hint, that if a thing came from abroad we were almost sure to set it down for a species, when it might be, and indeed often has proved to be, only a variety. If a Camellia were introduced from China, and it was different to any thing we had already, it would be set down at once for a new China species. If a better thing were raised from seed in England it would be only called a variety. Now we should like to ask the difference between a seedling, with a new character, raised in China, and one with a new character, raised in this country—where would be the distinction? And let us go further, and suppose some of our collectors picked up a new one in the bye-ways of the great empire, one that be to all intents and purposes

indigenous to some unfrequented place, would there be any proof that it was not originally as purely a variety from seed, even in its wild state, as if it had been the offspring of some indigenous fertilization at home? Certainly not, the flies and insects do the work in nature which we do artificially in our houses and pits; and although there are in some quite enough distinction to justify the name of a species, there are in many others proofs that they are one and the same genus, though very different from any varieties we now have. We throw out these hints, by way of caution to those learned botanists, who, though mere machines for distributing the ideas of others, recorded in books, are constantly straining at these points, for the sake of complimenting some friend or patron, by naming things after them. We do not hold with this multiplication of species; and we require a much better excuse than we have seen or heard yet for the many subjects at present honoured as species, but which we look upon as only seedling varieties.

HYBRIDIZING.

IT is not long since the great professors made a dead set at Florists' Flowers—ridiculed the confusion which it caused among the classes and orders—condemned them as perversions of the science of botany, and in fact, on all occasions, when the opportunity was given, opposed the idea of hybridizing altogether. It is now 1840, and the hybrid varieties of Rhododendron and Azalias, as well as numerous other subjects, have all but beaten the original species out of the garden; and though they would wish to pass it over gently, and would fain have it forgotten that they ever opposed the system, they are obliged, show after show, to acknowledge the beauty and grandeur of the very thing they condemned. I note this, because I was an early victim to the opposition, which has only ceased because common sense, and improved taste, has decided that hybrids are the most splendid of our productions in this country. X.

STANDARD PROPERTIES OF FLOWERS.

THERE has been no little squabbling about whether we are to set a limit to improvement, or form a standard which it is difficult or impossible to reach; and it has been the subject of discussion at many societies. The more the question was argued the more I was convinced that it was necessary to set us a pattern; and upon the principle that boys are taught writing from copper-plate copies, which it was morally impossible for them to equal, do I maintain that the pattern set us in Floriculture should be as perfect as imagination can form it, without any regard to the possibility of our ever producing any thing to equal it. I have seen some

very silly objections made by some northern growers against the pattern set us for Tulips; and the stupid man might just as well object to the schoolmaster's copper-plate copies for a youth to learn to write from. Nay, he might as well insist that an artist shall copy from bad pictures instead of from nature, because there was no chance of his equalling the works of the Creator. Floriculture, in my opinion, never made such rapid strides as it has since the Metropolitan Society made the perfection of flowers beyond our reach, instead of founding it, as others had done, upon the best already attained, and thus let a limit to our notions of excellence.

T. T.

CAUSES OF THE VARIETY AND VIVIDNESS OF COLOURS IN FLOWERS.

THE petals of flowers do not owe their beauty to the *colour* that paints them; for that, when drawn off, is dull and dead: neither do they owe their brilliant tints to the skin that covers them. Their lovely appearance is derived chiefly from the *bubbles of water* which compose their pabulum. Receiving the sun's rays, they are enlivened and brightened by reflection and refraction from those drops of water; and from that spot or point of light being seen in every bubble, and striking to the focus underneath. By these means the whole flower would at times be one *blaze of light* had not nature, to soften the same, covered the petal with an *upper and under skin* which curtails their diamond-like rays, and leaves them, instead, a lightness and beauty unequalled by the most exquisite art of the painter.

Uncovered, they would resemble the rainbow, formed by the same means; but, *shaded* as they are by this skin or gauze-like matter, they acquire a more chastened tint; and are equally delightful to the sight without being oppressive or injurious to the organs of vision.

The great number of these petals have, like the rose where its upper surface is peeled off and examined, an extremely thin skin; in which are innumerable minute bladders of pink liquid woven in a sort of gauze-like texture. When this is taken off a pabulum of white or watery bubbles is displayed; to which nature (in order to lessen the brightness) has added two circular white lines: those give a tenderness of colour to the *pink* which it is impossible to describe. The common *violet* is formed in the same manner; but, in this flower, the darker colour and thicker skin lessen the sparkling of the water.

In order to prove that bubbles of water are the true cause of the beauty which flowers transmit, either in vivid flashes or tender tints, to the human retina; we have only to take the duller colour that was ever mixed or painted, and, filling a small glass bubble with water, let the rays of the sun fall through it on the said colour, *it will become the brightest and most*

beautiful imaginable, and exactly resemble the tint of flowers. The moist petal is so filled with water, that it only excites our astonishment how such a thin gauze-like matter can contain such a quantity of liquor; and yet the flower reposes on the hand without wetting it.

To shew, however that some of our flowers may owe their beauty to other contrivances besides pabula filled with water, we may instance a common one which adorns our fields—viz., the ranunculus or butter cup. The petals of this very pretty wild flower appear to be varnished, but, on examination, we find that this is owing to a white powder resembling magnesia, which lies between the pabulum and the upper skin. "To try the effect," says Mrs. Ibbetson, (whose experiments on the physiology and structure of plants have placed her in the first rank of natural philosophers), "I got a quantity of extremely small glass bubbles containing water blown for me, and I placed them as in a petal, in *rows*: although infinitely larger, yet they appeared to be a petal greatly magnified. I covered them with a piece of gauze, (painted so as to resemble a flower) and, truly did it imitate the sort of brightness and brilliancy which it was intended to represent."

THE SENSITIVE PLANT.

THIS little curious and favourite plant is well known to most people. It shrinks at the slightest touch; the leaf folds up and hangs down, and if watered with a fine Rose watering pot, actually looks dead for a time. This peculiarity has given rise to many speculations, for there is every appearance of feeling; and after shrinking at a touch, and drooping all over, it becomes in an hour as perfect as ever. Its botanical name is *Mimosa Pudica*, but it is much more commonly called the Sensitive Plant.

The movement of the leaves of the *Mimosa Pudica* have their origin in certain enlargements, situated at the articulation of the leaflets with the petiole, and of the petiole with the stem. Those only which are situated in the last articulation are of sufficient size to be submitted to experiment. If, by a longitudinal section, the lower half of this swelling be removed, the petiole will remain *depressed*, having lost the power of elevating itself:—if the superior half be removed, the petiole will remain constantly *elevated*, having lost the power of depressing itself. These facts prove that the motions of the petiole depend on the *alternate turgescence* of the upper and lower half of the enlargement, situated at the point of articulation; and that *contractibility is not the principle of these motions*.

If one part of the plant be irritated, the others will soon *sympathise*, or bear witness, by the successive falling of their leaves, that they have successively felt the irritation:—thus, if a leaflet

be burnt slightly by a lens, the interior movement which is produced will be propagated successively to the other leaflets of the leaf, and thence to the other leaves on the same stalk. A very clever French experimentalist, Mons. Dutrochet, found—

1st—That this interior movement is transmitted equally well, either *ascending* or *descending*.

2d—That it is equally well transmitted, even though a *ring of bark has been removed*.

3d—That it is transmissible, even though the *bark and pith be removed*; so that nothing remain to communicate between the two parts of the skin, except the woody fibres and vessels.

4th—That it is transmissible, even when the two parts communicate merely by a *shred of bark*.

5th—That it may be transmitted, even when the communication exists by the *pith only*.

6th—But this it is *not transmissible*, when the communication exists merely by the *cortical parenchyma*.

From these very interesting experiments, it results that the *interior movement* produced by irritation, is *propagated by the ligneous fibres and the vessels*.

The propagation is more rapid in the *petioles* than in the body of the *stem*: in the *former* it moves through a distance of from *three to six-tenths* of an inch in a second; in the *latter*, through from eight to twelve hundredths of an inch, during the same portion of time. External temperature does not appear to exert any influence on the *rapidity* of the movement, but very sensibly affects its *extent*.

Absence of *light*, during a certain time, completely destroys the irritability of the plant. Such change takes place more rapidly when the temperature is elevated, than when it is low. The return of the sun's influence readily restores the plant to its irritable state. It appears, therefore, that it is by the action of *light*, that the vital properties of vegetables are supported, as it is by the action of *oxygen* that those of animals are preserved; consequently, *etiolation* is to the former what *asphyxia* is to the latter.

TURNING WHITE FLOWERS RED.

We mentioned, in a former article on various fertilizers, the fact of a white Hyacinth being turned red by merely applying chemical agents. We think the experiment curious, because both plants were cultivated in the ordinary way, and the application was used in the process of watering. The following fact, however, is curious, because in all probability it was the precursor. It may also set others experimentalising upon the subject, and lead to important results.

"M. Biot has presented to the French Academy of Sciences some flowers of the white Hyacinth, injected with red, by absorption of

the juice of the *Phytolacca decandra* (Virginian Pokeweed). Botanists have often been desirous of introducing different colouring matters into vegetables, in order to show their texture, and the direction of the juices which nourish them; but the greater number of these colouring matters have either been rejected by the tissue of the vegetable, or, when received, have injured them. In the 'Recueil des Prix de l'Academie de Bordeaux,' published in 1733, a M. Delabaisse stated in a memoir on the movement of the sap, that the juice of the *Phytolacca decandra* is exempt from these objections, and succeeds perfectly in colouring all kinds of white flowers, and even some green leaves. Vegetable chemistry and physiology were at that time too little advanced to enable the author to profit by all the advantages attending this discovery, but M. Biot, when trying his experiments on sap, recollected this memoir, and had some plants of the *Phytolacca* raised, in order to verify the assertions contained therein. Generally speaking, M. Biot was successful, but the differences which presented themselves are well worthy of remark and future experiment. Some plants entirely refused to absorb the juice, others sucked it up with avidity, and these opposite results would attend plants which are closely allied to each other in the natural system. Several minutes were sufficient to vein with red all the petals of a white monthly rose, while a nutmeg rose, equally white, was not in the least affected by the juice. Even flowers of the same species, and on the same stock, offer the same anomalies.—D. 1837.

AQUATIC HABIT OF THE MELON.

IN the spring of 1833, I received seeds from some Asiatic melons. Among the plants raised was one of the striped-green Housainee. This plant was placed close to the corner of a chambered pit of the stove, on three exterior sides of which the flue ran, and heated the air of the chamber. The walls of the pit were built of four-inch brick work, and the base, upon which a set of planks rested, that supported a bed of light leafy soil, was even with the top of the flue. Upon the covering tiles of the flue a little brick cistern was made, and cemented on all sides: it was intended to contain a small quantity of water, and yield aqueous vapour to the atmosphere of the house. The reader will remark two facts most particularly—the first, that the wall of the pit and chamber formed *one side* of the cistern, therefore that portion of it was made water-tight by cement. Second, the melon in question was planted close to the cistern, on, or nearly on, a level with it, the wall only, and a small quantity of the soil intervening between the roots and the water of the cistern. Under these circumstances the plant grew, and nothing particular occurred till the second week of July,

when a small portion of the roots was perceived to have entered the water-trough by a mortar-joint of the wall. At the moment they did not excite much attention, but by the nineteenth day they assumed so decided an appearance that I made the following entry in my Diary:—

“ ‘The roots of the Housainee have formed the ‘fox-tail’ in the water-trough, in several tufts of straight fibres, furnished with laterals: it is singular, if water in profusion should prove suitable to melon growth.’ I made communications of the chief facts to Mr. Knight the President, to Dr. Lindley, and also to Mr. Mearns, late of Welbeck; and was favoured with replies highly gratifying to my feelings.

“ I subsequently suggested a mode of proving the correctness of my inference, and which might conform in a degree with the practice of the Persian gardener, then better understood by me than it was in the first instance.

“ I have proved the Persian Housainee plant to court water as a medium wherein its roots will flourish, and that this melon, also my variety of the Gernek and the scarlet-fleshed will take root in water, if assisted by a very temperate bottom heat during September, and even later. Also, that cucumber plants, and the single leaves of a large size will root speedily by the same treatment. I had, in December, a small cutting that took root in a phial, placed in a cool part of the flue, and was transferred to soil.’ This mention of autumnal and winter rooting was made to show with what facility plants might be raised; not to restrict the period, for they do much better in the height of spring and summer.

“ I preserved many masses of the fibrous roots of the melon plant, which had ramified from a thread so minute, that the orifice through which it passed, the cemented mortar joint, could not be seen. I sent a tuft of these roots in a phial of alcohol to the Horticultural Society, and still retain a portion in spirit as a natural curiosity.

“ J. TOWERS.”

WEEKLY JOURNAL OF GARDENING.

WEEDING is, and will continue to be, a most important and not to be neglected task; vegetation will be rapid, every day will produce its work, and not an hour is to be lost.

Plant all kinds of vegetables for general crops, all the Cabbage tribe, Lettuce, Cauliflower, Broccoli, &c.

CULERY.—Prick out that which is large enough two inches apart, to advance for planting out.

PEAS.—Stick those which require it, still sow the large kind for succession crops; earth up on dry days those which are sufficiently high to require it.

POTATOES.—No time is to be lost in completing the planting for late crops. Few ought

to have any out of the ground after such a long dry favourable season.

BEANS.—Plant a few white blossom and green Genoa: they are small, but finely flavoured while young. Earth up those beans which are sufficiently advanced.

VINES propagate by cuttings and layers, they will take root almost immediately. Dress the vine borders with good rich compost.

WALL FRUIT.—Blossoms must be protected carefully from the frost by old netting, bunting, or other light covering, which can be removed easily.

AURICULAS are now expanding their blooms. They who desire to have these flowers in perfection must carefully dispose the pips by bending down the outside ones to give room to the inner buds, the smallest of which may in many cases be advantageously removed by a pair of tweezers, as those which are manifestly crowded and stunted, will never open in time to be useful; cover all that are under hand-glasses from the effects of the sun. If any one pip has opened very much in advance of the rest, so as to be spent before they are likely to overtake it, remove it at once. Cover up warm of a night.

TENDER ANNUALS.—Prick out in pots or frames to encourage their growth, and strengthen them, for planting in the borders or potting.

TULIPS may now without disadvantage have any warm gentle showers, but if there be any indication of a frost, let the mats at night be doubled and reach the ground, the water which will lie in the heart must not be allowed to freeze, as it would inevitably damage the rising bloom, or if that has advanced, cause the stem perhaps to die off in that part, thus destroying the bloom altogether. If by any chance your foliage is frozen, water them all over and keep off the sun until they have recovered.

GRAVEL WALKS should, if not done before, be now turned, dressed, and rolled when necessary.

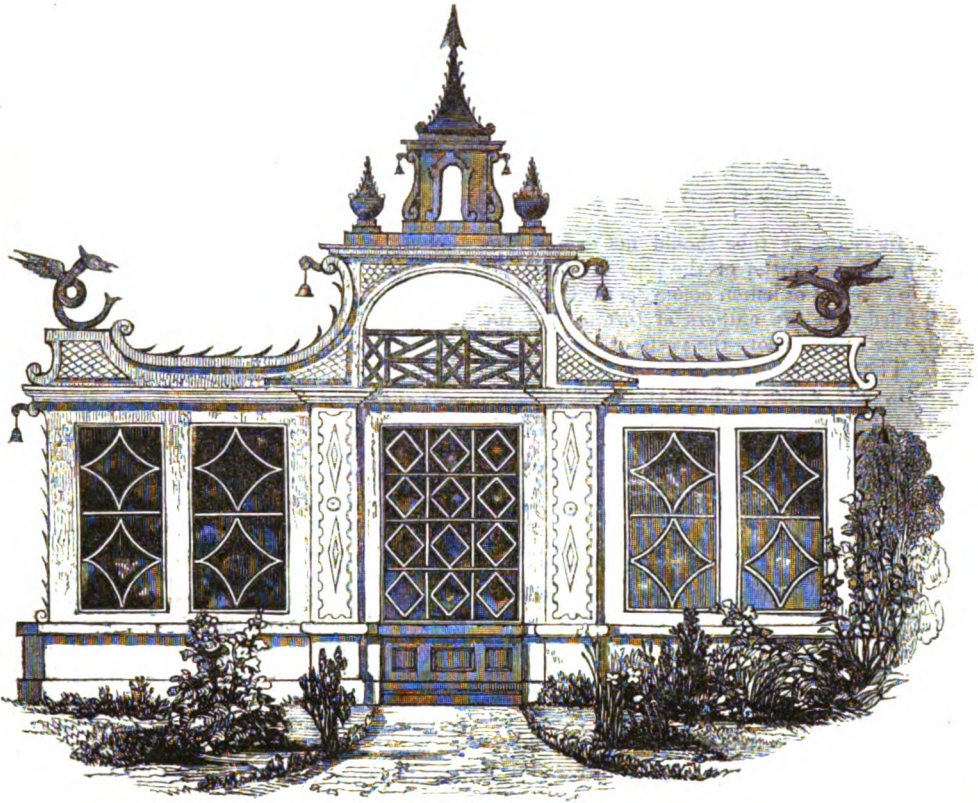
LAWNS.—Mow in wet weather once a fortnight or even oftener, if it grow long, while the growth is rapid, the colour and texture will suffer. Roll also a day or two before each mowing.

BORDERS AND CLUMPS.—Clean and dress, take out dead and damaged plants, clean and cut into moderate compass spreading herbaceous plants; keep all plants and shrubs within proper dimensions by reducing them to handsome shapes, and when too large remove them, and replace them with something more appropriate.

Stake standard shrubs, roses, &c. Stick and tie all flowering plants which require support.

GREENHOUSE PLANTS, whenever you can conveniently accomplish it, should have all the benefit of open air, remove the pots out altogether, let them have the benefit of a warm shower; this will increase the beauty of every plant that will bear it.

April 15, 1843.



DESIGNS FOR CONSERVATORIES.

THE only subject, connected with a garden, in which the Chinese have exercised or exhibited any thing like taste, is their Conservatories, and it is likely to induce us, in this country, to adopt their style. In several distinguished places—not excepting even Royal gardens—we are to have “the Chinese Conservatory;” and it is so admirably adapted for Camellias and Orangeries, that we shall not be surprised at the general

adoption of plans, after Chinese models, for most newly erected concerns.

In giving, therefore, a series of designs for those who are erecting Horticultural buildings we shall offer, occasionally, one of Chinese origin. In that now presented the roof is not glass, but formed solid, after the fashion of many old Orangeries, a plan which agrees better with the plant than those which have more light.

PROPERTIES OF THE AURICULA.

SIR,—I have great respect for “THE GARDENER AND PRACTICAL FLORIST,” but I beg to say, that in my opinion, it does not raise the work, to assume the credit of founding properties by merely altering the language of other writers, whose ideas you have most completely embodied. You will find the Properties of the Auricula, in the *Gardener's Chronicle*, almost in the same words, but certainly you have not added a single idea.

Yours, FAIR PLAY.

We are much obliged to our Correspondent, who has unintentionally done us a service. Our

Properties of Flowers are by Mr. Glenny, who had published those of several flowers before this work was thought of; and except that they may be revised, for all we know, we are prepared to find them the same as were approved at public meetings of Professional and Amateur Florists, though two-thirds have never been published before. Now, with regard to the Auricula, Mr. Glenny's were published most certainly years before the *Chronicle* was in existence. We can now only lay our hands upon a copy published in 1837. Let us compare them.

BY MR. GLENNY.

The Properties which constitute Perfection in the Auricula.

The properties of the Auricula may be divided into three series, namely, those of the single pip, those of the single plant, and those of a pair as usually shown.

THE PIP.

1. Should be round, large, smooth at the edges, without notch or serrature, and perfectly flat.

2. Its centre or tube should not exceed one-fourth of the diameter of the pip; it should be of a fine yellow or lemon colour, perfectly round, well filled with the anthers or thrum, and the edge rise a trifle above the paste or eye.

3. The paste or eye should be perfectly round, smooth, and white, without crack or blemish, and form a band or circle, not less than half the width of the tube, all round it.

4. The ground colour should be dense, whole, and form a perfect circle next the eye, and on the outer part be finely broken into a feathery edge; the brighter, darker, or richer the colour, whichever it may be, the better the flower; but if it be paler at the edges of the petals, or have two colours or shades, it is a fatal defect.

5. The margin or outer edge should be a fine unchangeable green or gray, and be about the same width as the ground colour, which must in no part go through to the edge. From the edge of the paste to the outer edge of the flower should be as wide as from the centre point of the tube to the outer edge of the paste—in other words, the proportions of the flower may be described by drawing four circles round a given point at equal distances, the first circle forming the tube, the second the eye, the third the ground colour, and the fourth the outer edge, and the nearer they approximate to this (except that the ground colour and green break into each other in points), the better the flower.

OF THE PLANT.

1. The stem should be strong, round, upright, and elastic, well supporting itself, and from four to seven inches high.

2. The footstalks of the pips should be so proportioned as to length and strength, that all the pips may have room to show themselves, and form a close compact truss, not less than seven in number, without lapping over each other, and all alike in colour and property.

3. The truss is improved if one or more leaves stand up well behind the flowers, for it assists the truss, and adds much by its colour to the beauty of the pips.

4. The foliage should be healthy and well grown, and almost cover the pot.

OF THE PAIR.

1. The pair should be of equal height and size of truss and foliage.

AS PIRATED IN THE "CHRONICLE," THE WHOLE BEING CLUMSILY RE-WITTEN.

The properties which constitute a perfect Auricula in the estimation of a florist, and the principle rules which regulate his judgment when examining this favourite stage flower, are the following:—

In its general appearance *the foliage should be well grown and healthy*, covering a space about equal to double the width of the head of bloom. The stem should be firm, erect, and sufficiently strong to support the truss without assistance, and to carry it well above the foliage. *The foot-stalks of the pips should be strong, and of such a length as will allow the flowers to open without one overlaying another, the whole forming a compact and globular head of well-expanded flowers, equal in size and similar in properties.*

The addition of one or two guard-leaves, *standing up at the back of the truss*, gives a finish to the whole, and adds considerably to its beauty by the contrast they form with the vivid and lively appearance of the flowers.

The qualities which the individual pip should possess, consist in its being *perfectly round, flat, and smooth on the edge; the divisions which form the segments of the corolla should be but slightly indented, thereby rendering the circle more perfect.* The tube, or centre, must be round, of a yellow colour, *filled with the anthers or "thrum."* The eye, or "paste," round the tube, should form a perfect circle of a dense *pure white, clean on its edges, even, and free from blemishes.* The band of colour surrounding the eye should be *dark, rich, or bright*, joining the margin with a feathery edge, equally distributed all round, but *never encroaching so much upon the edge as to pass through to the rim.* The margin, or outer edge, must be of a *permanent green or grey colour.* The circles which compose the face of the pip are considered of the finest proportion when they are of a *uniform width; that of each circle being half the diameter of the tube.* The accompanying figures will illustrate the properties above mentioned, which are considered to form the standard of perfection in the Auricula.

2. The colours of the flowers should be as much contrasted as possible, so that in that particular, a green and a gray edge, or a black and a bright ground, or a dark and a light green, or any other contrast would be a point over equally good flowers not so contrasted.

Other points might be mentioned; but these are the obvious properties not to be lost sight of in appreciating this beautiful flower.

What we complain of is, that all he writes is from us; and that the dishonesty and meanness lies in this fact, that instead of acknowledging that he has adopted anybody's dictum, he puts forward the subject as if it were his own; and while he pays us, unwittingly, the high compliment of preferring our rules to any body else's, it is only like the pickpocket in the crowd, who preferred taking the particular silk handkerchief which he knew to be the best. And now, for the present, we dismiss this fashionable *Fitch*.

And now, having given the two, and fully agreeing with our Correspondent that they are essentially the same, we merely desire that justice may be done to the original. We are quite aware that the plagiarist must have given the same, or given something wrong; but it had been more honest to have given Mr. Glenny's own words, and have acknowledged the same.

ON RAISING POTATOES FROM SEED.

My attention was directed in 1832 to the annually increasing distemper in the staple crop of this country, and being of opinion that the youthful progeny raised from seed would possess more vigour for resisting the attack of the distemper, whatever it was, I determined to put this opinion to the test of experiment. With this view I gathered the seed, or apples as they are called, choosing a field in which there was one acre of pink eyes without one single miss; the field is bounded on one side by a wall and shrubbery; on that side was the pink eyes; the rest of the field was planted with various kinds and many colours. I took the seed from ten drills along the wall; one basket I mixed with sand, and let them remain till next spring; another basket I pressed, washed, and strained, till little but pure seed remained, then exposed it every day in the sun; as soon as the seed was dry and firm I papered it up for next year. I may just mention that seeds properly managed will keep six years good to my certain knowledge (a hint to poor emigrants). In April I prepared part of a border by digging in some sea sand and pointing in a little pigeons' dung; I marked out three beds, five feet wide, along each bed I drew five drills, one-half inch in depth, and sowed the seeds in the same manner as carrot or turnip seed is sown, by the hand, covering them evenly. I forgot to mention I had the ground well broken and raked fine before I drew the drills; as soon as fit, which was in a

short time, I thinned, by leaving a single plant at the distance of four inches from each other; I hoed between the drills frequently, and gave them a gentle landing twice; by such culture, that season, when ready to dig, some were as large as a goose egg. I also sowed an equal space of ground, and as well prepared, with seeds and sand; some of the seeds sprung immediately, others did not come up till late, so that by bad sowing (as I did not see whether it was seeds or sand) and by bad vegetation, I had no crops. The best plan is to clean the seeds and dry them. I found fourteen distinct kinds—black, blue, red, lumpers, two or three sorts of Bangors, the most part pink eyes, and what is singular, not one apple potato, and only one stem of what is called cups; next season they were planted in the field by the plough, slightly covered in drills; the same field had many blanks, but none in those sowed from seed. Next spring they were carefully sorted, many given to the pigs, and nothing but pink eyes retained; these were planted as formerly, and amid universal failures, not one missed, and the increase was considerable; and now they were to be put to the test, hitherto they had been nursed, but now was their time of trial. Near half an acre of ground was planted with them; not one failed, but the crop was very unequal, some very ripe while others were only beginning to grow; altogether the crop would in such a year as this be considered unprofitable, but then, it was hailed with delight.—I am Sir, &c.

WILLIAM DOUGALL, Gardener.

Newbridge, Swords.

[This writer should have examined them minutely, paid great attention to the ripening, seized upon those which has some desirable peculiarity, and propagated a new race from each of those which were really good, because among the Properties of the Potato earliness, hardness, great produce, handsomeness, and many other points are desirable, and the only true race that can be depended on is that produced from the single seed.—*Editor of the Gardener.*]

FLOWERS AMONG THE ANCIENTS.

THE love of flowers begins in infancy, and ends only with life. May the living take up the subject afresh for us, and ornament our graves. Dr. Fiedler says—

“Bacchus was held by the Grecians as the god of flowers as well as of trees and the vine:

he dwelt sometimes in Phyllir, the land of flowers, sometimes on the rose-decked Pangæon, occasionally in the rose gardens of Macedonia and Thrace; and was called, therefore, Anthios, the flowery. Before he had flowers, ivy circled his head. Venus crowned him when he returned from India. He took the chaplet that Ariadne in Naxos had woven from the Thesæion; and walking beneath the sky at night threw it up to the stars, where it yet shines forth.

"The gods first made use of flowers in the form of a coronet; and Zeus himself was crowned by the other deities, after the war with the Titans. At first, therefore, flowers and chaplets were the exclusive decorations of the sacred statues, priests, sacrificers, and sacrificed; they even served as an offering.

"In later times, heroes and meritorious persons were crowned, independently of the service of the altar: the victors in their names received coronets of flowers, and these sweet decorations soon formed a part of the jovial and intellectual feasts of antiquity.

"Lovers hung their chaplets at the doors of the chosen ones; crowned with flowers, the plighted pair stood before the altar; crowns of flowers decorated the portals of the newly-married couple; crowned with flowers, the soldier advanced to battle; crowned with flowers the conquerors returned.

"Most of these customs remain to Europeans in the present day: our churches are adorned with flowers and coronals. Flowers are the first offerings of love; flowers give life to the wedding, birthday, and the feast; flowers are the last gifts that are strewed upon our graves."

PRIZES AT SHOWS.

It is a mistaken notion that large prizes bring the most competitors, for the same value divided among half-a-dozen prizes would give exhibitors better hope of success, and induce a greater number to compete. The injudicious adoption of a twenty-five guinea cup, for instance, entices one or two large growers, but if the value were divided into five prizes of seven, six, five, four, and three guineas each, a dozen would compete; besides which, there is frequently so little difference between the best and next best stands, that there seems to be a crying injustice in giving twenty-five guineas to one and nothing to the other. There has never yet been a Dahlia show to beat some of the Metropolitan exhibitions, and the prizes were always upon that principle, the value divided among a number instead of being concentrated in one. It is a safe conclusion that "the more winners there are the better." Seven guineas are enough for any amateur prize, and as nurserymen profit enough by their orders, the prizes for dealers should be less rather than more.

THE NAMING OF TULIPS.

ONE of the causes why a tulip assumes so many names, is innocent enough; but it is impossible to deny that it is a very great evil. The breeders from which many standard flowers have been "broke" have got spread among many growers. Each, when he breaks a flower, gives it a name, and thus is the identical variety named in half-a-dozen places at once. In this way has Davey's Trafalgar been called twenty names already, and stands a very good chance of twenty more. No flower in cultivation comes so many different ways; a man may safely grow twenty in a small bed, and scarcely see two alike. It would be a very good plan to adopt, if our correspondents would assist us in giving all the names they know of, borne by the same flower, for it is more than ever likely that the evil will increase, unless checked in some decided way. Clarke's, Lawrence's, Slater's, Holme's, Strong's, Rutley's, Davey's, Atkinson's, Milliken's, and we know not how many other breeds of breeders are now in every grower's hands; each year gives the cultivator newly "broke" flowers, and every one is too proud of naming a good one, to let the circumstance go by. Mr. Clarke himself, on breaking Polyphemus in rather good style, named it Ulysses, and this flower is familiar to all growers. Polyphemus notoriously comes finer young than old, and it frequently happens that it breaks finer than it is ever seen afterwards; we strongly recommend those who are seeking new flowers to look at as many beds as possible, before they throw away a pound on what may appear a novelty to them.

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STRINGS any wall fruit-trees that look foul, or are attacked with the fly. If with tobacco-water, you must do it afterwards with clear water, but perseverance with only clear water, will by a few repetitions get rid of it. It should be always done the first thing in the morning, that they may be dry before the evening in case of frost or frosty wind. For grubs or caterpillars, the leaves must be looked over carefully, for unless they are speedily caught the foliage and fruit will assuredly suffer.

JERUSALEM ARTICHOKEs.—Plant, if not done already, or if any remain out of the ground, get them in as soon as possible.

BEANS AND PEAS.—If the last sown crop of Beans is well up and earthed, you may get in another crop, and Peas may be continued in succession about three weeks apart.

PARSLEY.—May be sown in drills.

POTATOES.—Get in principal crops as soon as possible.

GREENHOUSE PLANTS.—Continue to give all the air you can, and bring some of the best specimens therein out in the open garden, during the day.

April 22, 1843.

NEWSPAPERS AND BOOKS.

THERE can be no mistake about the value of a book like this, when we consider that it contains in each page something instructive, applicable to all times. To compare it with a Garden Newspaper, is like comparing the *Quarterly Review* with the *Times*. The one is a repository of subjects permanently interesting, the other is a record of passing events; and although as indispensable in its way, and as important to those who are in the profession, or who take great interest in public shows, is totally different in its nature. THE GARDENER AND PRACTICAL FLORIST will in time comprise all the history and art of Gardening, and, as it proceeds, is complete so far as it goes. It is a work which every father ought to put into the hands of his child as soon as he is old enough to take an interest in a garden. It contains instruction, in its most familiar form, as to the practice of gardening, in its most simple and understandable character. The youth who reads carefully, will find enough to teach and please him, if he have only a rod of ground; yet the most finished Horticulturists will see enough to interest them. THE GARDENER AND PRACTICAL FLORIST would be desirable in any Garden Library, were it only for its Essays, and less important papers on the branch of gardening called Floriculture, on which it in reality stands alone; and the time will come, when it shall be a lesson book in schools, for there is nothing more conducive to health and strength than early efforts in a garden; and whatever can familiarise youth with the knowledge of flowers and plants, familiarises him with the most beautiful works of the Creator. This may seem very much like praising ourselves; but the fact is, many people have fancied, until they saw the work, that it was a Garden Newspaper in miniature, than which a greater mistake cannot be made. The man who takes all the Garden Newspapers, will find THE GARDENER AND PRACTICAL FLORIST as interesting as if he took none—for the nature of one is volatile, the other solid. The records of shows here, and doings there, are interesting for the moment; but what are they when gone by? The solid instruction for Tyros and Amateurs, and the Essays which contain the experience of ages, are the same now and for ever. Garden newspapers are better for gardeners than other newspapers are, but that is all; they are no more to compare with this work than a butterfly to a brilliant; as a proof of it, not one in fifty saves a newspaper, and binds it in a volume, while forty-nine out of fifty buy THE GARDENER AND PRACTICAL FLORIST that it may form a good book in their library.

EXPERIMENTAL OBSERVATIONS ON
VEGETABLE PHYSIOLOGY.

BY N. NIVEN, ESQ.

Read before the British Association.

HAVING been partly engaged in some experiments on the subject of vegetable physiology, it may perhaps not be uninteresting, on the present occasion, to submit a statement of the results, some of which appear to me both curious and important. At the commencement of my first series of experiments, in the early part of the spring of 1835, my principal object was to ascertain, by different processes of ringing, how far the life of the tree depended upon the cortical layers or parts external to the wood, and the alburnous layers or sap wood; or, to speak more plainly, that portion of the woody structure interior of the bark. Having observed, in studying the works of several eminent authors in this very interesting branch of botanical science, that no small diversity of opinion existed amongst them thereon, because more interested in the inquiry. For example, it may be recollected, that Du Petit Thouars states, "where the bark, liber, and alburnum, was removed, the tree continued to live," whilst the venerable and celebrated Mr. Knight found by a similar experiment upon the oak, "that the tree exhibited no signs of vegetation in the spring following." I was, for such reasons, induced to adopt the experiments alluded to.

The trees operated upon are the common English elm, about forty-two years of age, the breadth of the circles of the rings being in each case about four inches, and the experiments now to be described, those of a second series.

Experiment 1.—This was part of the stem of a tree deprived, by ringing of the cuticle, and external cortical layers only. About the month of May following, a fresh formation of young bark and wood began to take place from above, descending in a very short time over the whole surface of the ring, excepting a few spots where the operation had been performed rather deeply. The tree continued to grow as vigorously as any of the same kind in its immediate neighbourhood, and the excorticated part is this year nearly filled up with new bark and new layers of sap-wood.

Experiment 2.—Was a tree deprived of the whole of the cortical layers, with every vestige of the pulp or cambium attached to the alburnum. This tree continued for the first year as healthy and vigorous as any of its undisturbed neighbours; but in this, the 2nd year, August 1837, there are evident signs of less energy and vigour in the tree, and there is no formation of new bark or wood over any part of the surface of the ring. It has all over appeared dry and inactive. Two developments have, however, been produced of a curious and interesting description; one of which I have not seen noticed

by any author, which I shall, however, reserve the notice of till the conclusion of the paper.

Experiment 3—In this case part of the stem of a tree was deprived in the same way of the bark, liber and cambium, with two layers of the alburnous wood. This tree was rather in an unhealthy state when the operation was performed. It continued to live throughout the last year, and shed its leaves rather early, whilst this year it developed its leaves, but has since withered away and died. I have every reason to conclude that the operation of ringing accelerated its death. There was no appearance of any flow of sap, either above or below, from the two exposed layers of alburnum, but there was a small development of the ascending and descending principles, between the bark and alburnum on the upper and lower edges of the ring.

Experiment 4—Was a tree divested not only of its bark, liber and pulp, but also of six layers of the alburnous wood. This tree exhibited no diminution of health or vigour last year, but this year it exhibits an early yellowing of the leaves, similar to that described in No. 2. No appearance of sap showed itself on either of the surfaces of the exposed alburnous layers.

Experiment 5—Was the stem of a tree, divested of its cortical layers, and twelve layers of the alburnous wood. This tree continues to live, but appears to be less healthy than the last. In the case of the exposed surfaces of alburnous layers, no vestige of sap has made its appearance, excepting from a cut that had been inadvertently made with the saw on one side, to the depth of perhaps five or six layers of wood, deeper than the 12, from which cut a flow of sap took place, that continued to run, more or less, throughout the whole of last summer, and a little of this spring, but has latterly ceased.

Experiment 6—Was an isolated branch where the space around the separated bark and branch was divested of all the cortical layers and pulp or cambium. The branch continued as healthy and vigorous as any others in the tree, and exhibited a beautiful example of the descending principle, both from the edge of the bark above the separated part, and the edge of bark below the branch, on the separated bark. The woody layers formed beneath were evidently produced through the medium of the leaves of the branch, as the formation is principally below the line of the branch's insertion on the tree.

Experiment 7—Was one in which the greater portion of the internal parts of the tree were removed without apparently interfering with its growth above the operation, the tree being placed as it were on four separate pillars of bark and alburnous wood. This proved a singularly curious and interesting experiment, and will, I hope, prepare the way for some experiments still better adapted for the purposes of future investigation. In watching the flow of sap in this case, strange to say, it made its first appear-

ance, about the beginning of March, from above, descending through the pith. Shortly afterwards it appeared also from about fourteen layers of the nearest wood, around the pith, the exterior or alburnous layers remaining perfectly dry, thus accounting for the tap, if I may so speak, made by the saw in No. 5. Little or no appearance of moisture was observed on any part of the corresponding surface below, with the exception of a slight oozing from the external or alburnous layers, but this, however, was scarcely perceptible. I suspect that the principal flow of the ascending sap must have found its way up through the four pillars of alburnous wood alluded to.

From these experiments it would appear that the life of the tree does not entirely depend upon the preservation of the bark, liber, and alburnum, as two seasons of growth have elapsed since the operation of ringing was performed, and the trees, with the exception of the one alluded to as apparently accidentally dead, continue to develop leaves from shoots as before. It remains to be proved how long they will continue to vegetate above the rings. If I may be allowed to risk an opinion, I am disposed to think that whilst to one species of tree such operations would produce almost immediate death, in others the results would be very different. Drawing an analogy from animal life, as to the tenacity with which it is held by different species, I have every reason to conclude that the same will be found to hold good with respect to the tenacity of vegetable life in different species of plants also. We have, for instance, the willow, elms, and several other trees that will continue to produce leaves and shoots from the trunk, for one, two, or even three years after they are cut down, and laid along mere trunks. The descent of the sap described in experiment seven, as descending from above, through the pith and internal layers of wood, even before the development of leaves appears to me exceedingly curious and important, especially when I recollect that the received opinion is that the sap descends "through the cortical vessels," Mr. Knight admitting that when interrupted by the destruction of a ring of bark, he supposes part of it escapes downwards, through the alburnum, but before forming any positive opinion on the result, it is my intention first to follow it up with additional experiments.

In my first series of experiments in 1835, on watching the development of what has been called the "new cortical layers," usually appearing in the form of protruding bark, from the upper edge of the rings I was much interested to find something of a similar development beginning to appear from *below* also, and *exactly from the same part*, between the bark and the alburnum, as that from above. Recollecting no instance of any author having noticed this appearance, and remembering that statements perfectly opposite to such an appearance had been

made, as for instance in Sir H. Davy's fourth lecture, in his *Agricultural Chemistry*, he says, "that when new bark is formed, to supply the place of a ring that has been stripped off, it first makes its appearance from the upper edge of the wounds, and spreads slowly downwards, but no new matter appears from below rising upwards." A similar opinion appears to have been entertained by Du Hamel, and others, "who cut a ring of bark from a branch, and found that by thus stopping the descent of the pulp, the upper part extended and healed, while the lower remained stationary." On a close examination of the two appearances alluded to, with the microscope, I thought I could distinguish a marked difference between them, the one appearing like small *germs* or *buds*, the other like to the *rudiments* of roots. It immediately struck me that here might be *two perfectly distinct external principles*, proceeding in opposite directions through the same part of the tree, that is, through the *cambium*, or *pulp*, between the bark and alburnum, I thought by the application of some medium of moisture, I might be able to prove the supposition, and this I did by the application of moss to both edges of the one side of the ring. In about fourteen days after this application I found that my supposition had been correct. The specimens which I now exhibit are a repetition of the same result which appear to present a very important fact, namely, that there appears, exterior to the wood itself, *two perfectly distinct principles*, the one passing upwards to the development of leaves, which I would call the leaf principle, for I find it cannot be changed, and the other passing downwards to the development of roots, which appears to be equally permanent, and which I would call the root principle. I am consequently disposed to maintain that from any part of the surface of the *woody structure* these two developments are to be found, and it appears to me only a modified example of the *descending one* when we see roots proceeding from the stems of such genera as the *figus*, and many others. A very satisfactory proof of this is found in the case of propagating plants from cuttings, each appearing to contain within itself so much of the two principles that it only requires to be placed under such circumstances of *atmosphere* as will tend to preserve the action of the leaves without collapsing, until the descending principle has had time to ramify itself into roots, when by a gradual removal of the bell-glass, the plant is prepared to perform its various functions unaided, as well as to meet the vicissitudes of a constantly changing atmosphere. The one principle I have no doubt will be found to proceed principally from the soil to the expansion of *leaves*, and the other from the combined agency of the atmosphere to the formation of new wood, and the extension of roots. Corresponding with these views some eminent philologists are of

opinion "that where a bud shows itself at the base of a leaf, or on a branch or stem, it follows two opposite movements, one upwards, towards the air, and the other downwards, towards the earth. By the upper movement a new branch is produced, whilst the downward movement gives origin to a great number of new fibres, which lengthen out between the bark and the wood of the mother branch, as well as of the trunk down to the extremities of the roots. This opinion another learned gentleman says "rests entirely upon vague conjecture and hypothetical reasoning, and it appears to him the most fanciful and baseless opinion ever propounded. As yet I am extremely diffident to venture any general theory respecting the views I am led to entertain on the subject, but I think I am justified in the formation of some views concerning it, differing considerably from any that I am aware have as yet been promulgated.

It is about two years since I wrote a short paper on the subject of the first series of my experiments, which paper I had the honour of reading at one of the evening meetings of the Royal Dublin Society, in which reasoning from the eternal developments alluded to, I was led to doubt the possibility of roots becoming branches or branches roots, as has been published as the result of several experiments, which opinion I have since found agrees exactly with that which was held by Mr. Knight, who in a note on the subject says, with respect to the statements made by different naturalists, that the branches of willows and other trees, when buried in the soil, became branches, is not correct, instancing the mistake that Du Hamel made by using his cuttings too short. On repeating the experiment I found it successful, and obtained roots in the two situations most opposed to each other. If the views I entertain with respect to the *ascending* and *descending* principles, *exterior* to the wood, be correct, I can have no hesitation in saying that buds and leaves can never be developed from the extreme ends, or mouth-pieces of the roots, but that at any, even the least distance from these, buds and leaves may be produced, as in the case of propagation, by roots, when the crown of the part of the root put down frequently produces shoots, but never that I am aware of from the lower end. The plant may thus be propagated either by the root or cutting of the top, from the simple circumstance of the ascending and descending principles being at all times more or less in action, as well as diffused over the whole structure of the vegetable body.

GARDENER'S SOCIETIES FOR MUTUAL INSTRUCTION.

ONE of the most recently established institutions of this kind has just published its half-yearly report, with a number of papers read at its different meetings; and it is impossible to look

upon the pamphlet without being greatly interested for the welfare of the Society. From this Report we gather the fact, that it has been formed less than twelve months, in the neighbourhood of Regent's Park—that the meetings are held weekly—that subjects are given out for each meeting—and the members endeavour to produce papers explanatory of their notions and practice. The pamphlet, or part, is in matter far more valuable than many parts of the Horticultural Society's transactions: there is less show and less sophistry, but more practical information. They do not appear to have fooled away months in trying how much poison a balsam can take without dying; nor wasted hundreds of pounds in making other silly experiments; but they give the accounts of successful practice, and seem to have founded their practice on rational principles. Content with doing things well, they leave to others, with more money and less brains, the task of seeing how much mismanagement a subject can bear. We have quoted one paper, rather because it is a good length for us, than for any superiority it possesses, for the articles are all alike useful to the particular class which may be interested. We mean this; although the culture of the *Camellia* may not be exactly the thing for a man who particularly wants to learn the training of fruit trees, nor training fruit trees the exact subject for a man who has nothing but a greenhouse, yet for those the various papers suit, they will be highly useful, and deserve a place in a permanent work like our own. We cannot too strongly recommend the Society, and the first part of its instructions, to the notice of the Horticultural world.

ON THE HISTORY AND CULTIVATION OF THE
CAMELLIA.—BY MR. E. PIGG.

(Read at the Regent's Park Society for Mutual Instruction, September 29.)

The *Camellia Japonica*, is indigenous, both in China and Japan, and probably in other parts of Asia. In Japan it forms a large tree, and is held in high esteem, on account of the elegance of its large flowers, which there exhibit a great variety of colours, and are produced from October to April. According to Thunberg, the Japanese have several double-flowered varieties, and among them a double purple.

The *Camellia* was introduced first into England by Lord Petre, about or before 1739; the plants then brought over were killed by being kept in a stove; but it was afterwards re-imported, and was then kept in a conservatory. It began to come into general estimation in England about the beginning of the present century, and has since been more extensively propagated than any other genus of greenhouse plants, if we except *Pelargonium* and *Erica*. Within the last twenty years *Camellias* have been planted in the open air, some against walls,

and others as bushes; and provided they are protected for a few years after planting, till their roots become firmly established in the soil, they seem to stand nearly as well as the common Laurel in the climate of London. In Devonshire, *Camellias* have grown to immense bushes without any protection, and have also ripened seeds, from which young plants have been raised. According to Loudon, there was a single red *Camellia* at Bicton, about two and a half miles from the sea, and eight and a half feet above its level, which is nine and a half feet high, and the head covering a space of twelve and a half feet in diameter; and there are likewise several other varieties at Goldsworth, which have stood some of our severest winters in open and exposed situations; different varieties have also proved themselves hardy, at Messrs. Chandlers' Nursery at Vauxhall.

If then, we admit of their hardiness, and also keep in view the fine specimens which are produced on our south-west coast, in some of the warm bays of Devonshire and Cornwall, let us compare them with conservatory specimens, and we shall find them very inferior, and of little merit as flowering shrubs, when planted out of doors.

The other species of *Camellia*, in our gardens, which deserve notice, are *C. Maliflora*, or the apple-blossomed; *C. Oleiferu*, whose seeds yield a valuable oil in China; and *C. Reticulata*, which is by far the handsomest of all; its leaves are remarkably netted, and its semi-double flowers of a rich rose colour, are often as much as six inches across: this latter species evidently prefers to be treated as a conservatory plant, by being planted in a pit or greenhouse, in the open mould, for if confined in a pot, the leaves are apt to become white and unhealthy; if placed in a bright hothouse, its leaves and flowers are rendered much deeper coloured, but altogether smaller, and the shoots more stunted; it will not easily propagate, either by cuttings, buds, or grafting, like the common *Camellia*; but requires to be inarched in the young wood on healthy stocks, and it then takes freely; the parent plant, however, suffers so much from the mutilation attendant on this process, that it is two or three years before it is recovered sufficiently to be again submitted to the operation.

Camellias succeed best when treated as conservatory plants; that is, when planted in an open border, under glass, just protected from frost, and freely exposed to light and air; they then grow to large evergreen bushes, covered with dense foliage, upon which, as on a lovely back ground, their fine flowers are beautifully relieved; they are then far handsomer objects than when their roots are confined within the limits of a garden pot.

The most successful and generally applied method of increasing this family is by grafting, or inarching, and by these means each variety

is extended and perpetuated. The most suitable season for performing the operation is in spring, when the plants have done flowering, and show an inclination to grow; the re-action of the vital powers does not, however, take place in all at any one particular time, on account of Camellias being forced into bloom at different periods; this point, therefore, I consider it best to leave to the good judgment and practical experience of the cultivator; yet those that are done in the latter end of March and beginning of April will be most successful. Sometimes they are increased by cuttings, but this is both a tedious and precarious method of obtaining them, especially the double varieties. It is only from seeds that we can expect new varieties, and of these, the single red is most prolific. They should be sown as soon as they are ripe in a compost of one part loam, one part leaf mould, one part heath mould, and one part silver sand. After sowing, plunge the pots in a hot bed, and the seeds will vegetate in a month or six weeks; if, on the other hand, the seeds are kept long, they will seldom vegetate in less than a year, and the greater number not at all. Stocks raised from seeds are the best; but as these latter are seldom produced in any quantity in this country, and are seldom imported in a fit state to vegetate, recourse is had to some other source for the almost unlimited number annually required. Layering may be considered as the best means of meeting the demand, and it is accordingly much resorted to; for this purpose stools are planted, of the common red variety, or any of the common sorts, into a cold pit or frame, and layers are made of the young wood of the previous year, which will root freely, and make good stocks the following season.

On preparing soil for the Camellia various opinions have been entertained, and two growers of this tribe of plant can scarcely be found who entirely agree in the preparation of their compost. The soil used by nurserymen, and that used by gardeners, ought to be two very different compositions; the nurserymen is looking to bulk of plant, and increase of young wood, while, on the other hand, the gardener's object is to increase the proportion of blossoms. The soil most suitable for growing the Camellia, and producing flowers, is two-parts good loam from a pasture, and two-parts heath mould, which ought to be brought to the compost yard, at least twelve months previous to its being used, during which time it should be freely exposed to the action of the atmosphere, which is of great importance. The soil ought to be mixed, and broken with the spade, never resorting to the detestable and often practised plan of sifting, which carries away and abstracts the decomposing fibrous matter, which is the principal support of plants cultivated in pots.

The soil used by nurserymen ought to be that recommended above for seed sowing, which, if

used with the addition of a small portion of well decomposed cow dung, will have every tendency to produce young wood, which is their chief object.

In potting Camellias, great attention should be paid to secure a free drainage, a circumstance of infinite importance to their welfare; also, so to place the potsherds as to defy the entrance of the earth-worm, having for a second course a quantity of burnt clay, or potsherds, broken about the size of horse beans; and finally, a layer of dry spagnum, or turf not decomposed, the quantity of each to be regulated by the size of the pots.

When the plants become rather large, they may be placed into tubs in preference to large pots, if there is not the convenience of a conservatory border for them. It may here be remarked, with what apparent pleasure the roots cling to the sides of a tub, and receive refreshment; and, on the other hand, how speedily they return whence they came, namely, into the exhausted ball of earth whenever they come in contact with the sides of a pot.

Various opinions are also held as to what season of the year is fittest for re-potting Camellias, but this, I think, ought also to range under two heads; the one with a view to the increase of wood, and the other that of blossoms, for, be it remembered, the production of wood and of flowers are two very different affairs. It is the opinion of some of our most practical men, that potting should be performed as soon as they begin to grow; this is, I think, most applicable to the nurseryman's course of treatment, his object being to obtain luxuriant plants. The best season to repot them, to obtain a profusion of bloom, is, as soon as the young wood is ripe, or nearly so, when the flower buds can be observed. It is a good rule never to set in action a new series of fibres, until the flower buds are actually formed, but if the plants are potted at the period when re-action takes place, an abundance of wood, and few flower buds must be expected. If the roots are matted, be particular in leasing them out at the bottom with the hand, and apply the knife as seldom as possible, it has a great tendency to make them canker and short-lived. After this is completed, the plants may be placed in a north aspect, beside a wall, or they may be placed in a greenhouse, according to the season they are wanted in flower. If placed in a house, a free current of air is indispensable. At all times, attention should be paid to the watering of them properly, more particularly during the swelling of the buds; likewise in their growing season, they ought to be plentifully supplied with that element.

They should be frequently watered overhead, with a moderately fine syringe, so as to wash away the dust from their leaves, which to all plants is extremely injurious, as by falling on the surface,

it stops the pores through which they are supposed to breathe, which must consequently be highly detrimental to them.

The following selection includes most of the finest in cultivation:—

VARIETIES WITH WHITE FLOWERS.

| | |
|-----------------|-------------------|
| Double White | Anemonæflora alba |
| Single White | Haylockii |
| Alba Semiduplex | Myrtifolia alba |
| Fimbriata | Flavescens |
| Imbricata alba | Candor |
| Ochroleuca | Eburnea |
| Allnutti | Hume's blush |
| Candidissima | Nobilissima. |

VARIETIES WITH WHITE FLOWERS, STRIPED OR SPOTTED.

| | |
|-------------------|----------------|
| Albertus | Pompone |
| Colvillii | Punctata major |
| —— striata | Picturata |
| Declinatissima | Press' Eclipse |
| Fortuita | Spoorthiana |
| Gray's Invincible | Sabiniana |
| Rosa Mundi | Sweetie |
| King | Tricolor |

VARIETIES WITH ROSE-COLOURED FLOWERS.

| | |
|-------------|----------------|
| Coronata | Palmerii |
| Elate | Rosa sinensis' |
| Elegans | Rosea |
| Fordii | Rose Waratah |
| Florida | Sasanqua roseo |
| Myrtifolia | Triumphans |
| Pæoniiflora | Vandesia rosea |
| Parksii | Woodsii |

VARIETIES WITH RED OR CRIMSON FLOWERS.

| | |
|---------------|-------------|
| Althæaflora | Imbricata |
| Benlilii | Lefeveriana |
| Chandlerii | Minuta |
| Concinna | Rossii |
| Corallina | Regalis |
| Conspicua | Speciosa |
| Decora | Splendens |
| Eximia | Waratah |
| Frakfortensis | |

VARIETIES WITH ROSE, RED, OR CRIMSON-STRIPED FLOWERS.

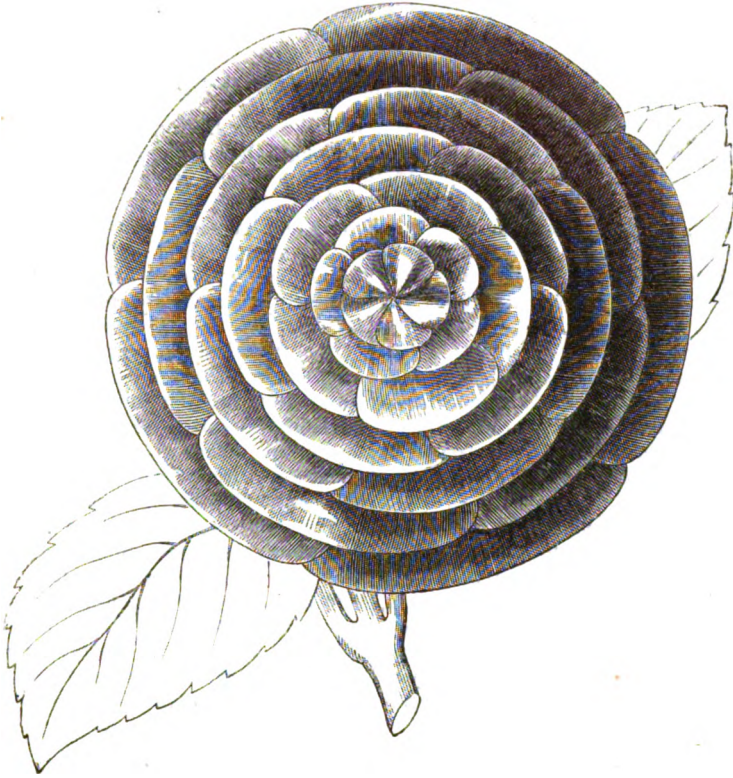
| | |
|-------------|-----------------------|
| Dorsettii | Queen Victoria |
| Donkelaerii | Striped or Variegated |
| Gilesiana | Serratifolia |
| Parksii | Nitida |

THE SHOWING SEASON.—1843.

WE look forward to a spirited competition among florists; and it has been ushered in with the most signal defeat of the only society that may be said to have contributed to its injury, and by a splendid triumph of another, which may now be the greatest prop to floriculture round London. The self-appointed society of censors, yclept the Floricultural Society of London, held its grand spring show meeting on Tuesday, and, of course, the whole establishment of the Crown and Anchor was on the *qui vive* for the occasion. The representatives of floriculture for all England, that is to say, the people who have

taken upon themselves to decide what flowers are worthy of notice—the society which assumed the monopoly of floral knowledge—the phalanx which arrayed itself against its more solid, and less pretending predecessor, the Metropolitan Society of Florists and Amateurs, was expected on the commencement of its third season to carry all before it, and the great room of the great tavern was in readiness for the reception of the seedlings of all England, and the admirers of seedlings from all parts of the country. We anxiously attended to get a sight of the flowers, and failed not to provide ourselves with plenty of paper for notes. We had engaged sundry draughtsmen to take portraits of the prize flowers, and intended to present our readers with the best of them, but we had no sooner put a foot within the house, than the hollow sound of our steps proclaimed our disappointment. We were refused admission by a voice which echoed and reverberated through the empty halls and staircases. Mr. Dickson, of Acre Lane, was the only person who had taken a single flower, and a young man with a very long face gave intimation that there was no competition. Thus, then, (on a day which should have produced one of the first exhibitions in the country) ended the hopes and anxieties of the Floricultural Society of London, a society which was originally formed to oppose the Metropolitan Society of Florists and Amateurs, and which, from the instant it was formed to the last moment it existed, committed, from meeting to meeting, blunder after blunder, until the very persons who were first to come forward were driven away by disgust. Turn we now to the South London Floricultural Society, to record the fact, that their exhibition of plants excelled every thing they had previously produced in quantity and quality, and that the exhibitors proved themselves worthy to compete with all England. The stove and greenhouse plants were beautiful, the Auriculas fresh and fine, as well as in large quantity, the only deficiency was in a flower which we have not yet seen well grown near London—the Polyanthus; and this fact should encourage some of those who evinced by their productions in other genera a first-rate skill, to commence its culture. There was not a solitary specimen that would have done justice to a stall in Covent Garden Market. Dickson, of Acre Lane, Clapham; Willmer, of Sunbury; and Gains, of Battersea, distinguished themselves in Auriculas, and the former had two seedlings, manifest improvements on those we already possessed in the same style, but not perfect by any means. Pansies were not in great abundance, but the few shown were well cultivated. The only real novelty among them was a pure white, with a splendid dark purple eye, by Mr. Thompson, of Iver. Its principal fault was its roughness, a fault which, as it prevailed in other kinds known to come well in

season, may disappear after the cold nights have departed. As we record novelties in flowers and plants rather than the triumphs of skill, we urge this society to encourage the raising of seedlings more and more. There is so much room for improvement in every flower, and we have given them such models and descriptions to imitate, that there cannot be a more delightful task than watching for the opening of new flowers, and selecting those only which are improvements for the purpose of adding to our stocks.



THE PROPERTIES OF THE CAMELLIA JAPONICA.

THERE cannot be a better opportunity of giving the properties of this beautiful exotic than the present—first, because the bloom is fresh in the recollection; secondly, because there is an excellent paper on the subject of its culture, by one of the members of the Regent's Park Society for Mutual Instruction. There may be an apparent similarity in the properties of many double flowers, because thick petals, smooth edges, circular flowers, dense colours, high crowns, apply to all or nearly all. The Properties of the Camellia Japonica may be classed thus—

PROPERTIES OF THE SINGLE FLOWERS.

The flower should be circular on the outside, when looked at in front, as in the diagram at the head of this article. The petals should be thick, smooth at the edges, broad and blunt

outside, cupped or reflexed, as the case may be, but imbricated (that is, each petal should have its centre over the join of the under petals), each row of petals should be smaller than the row immediately under it, and the number of rows, one above the other, should form the flower into half a globe. The colour should be alike all over the flower, if a self; and if blotched or striped, the contrast of the two colours should be striking. If the flower be white, it should be pure; and if white and coloured in mixture, the white should be distinct, and the outline of a blotch or stripe, where the white and colour joins, should be very decided.

PROPERTY OF THE PLANT.

The foliage should be large and bright, the leaves close together, the joints short, and

habit bushy. The flowers should come singly and at the ends of shoots, so as to bloom free from the leaves. Long straggling joints, like the variety called *Reticulata*, are objectionable; foliage dull and small like that of the same variety, is also detrimental to the appearance, and therefore forms another objection; rough ragged blooms, however large and showy, are a great drawback, hence *Reticulata* possesses a third very objectionable

character, and no plant was ever more over-rated. Pointed petals, like those of *Eximia*, are greatly against a flower, and in this case spoils a variety which has many other beautiful properties: open ragged-looking flowers like *Donkellaria*, however striking, are bad; and we may safely say, that there is no class of flowers, of which even the best, or rather the most esteemed varieties, are capable of so much improvement.

DESTRUCTION OF INSECTS AND VERMIN.

It has been long known, that the leaves of the *elder*, when put into the subterraneous paths of moles, will drive them away; when the same in a green state are rubbed over fruit trees and flowering shrubs, or when strewn among corn or garden vegetable, insects will not attach to them. An infusion of these leaves in warm water is good for sprinkling over rose-buds and flowers subject to blight; also, to prevent the devastations of the caterpillar.

A Pennsylvanian farmer states, in a late American journal, "that the *water* in which *potatoes* have been boiled, sprinkled over grain or garden plants, completely destroys all insects, in every stage of existence, *from the egg to the full grown fly*."

Ammoniacal liquor, produced in the manufacture of gas from coal, and to be procured for the trouble of carrying, at any gas work, will eventually destroy the grub and other worms, which so often defeat the hopes of the gardener; more particularly as regards his early crops. So far is this liquid from having the property of injuring even the tenderest plant, that it seems rather to invigorate than otherwise.

A paste of *charcoal powder*, or *soot* and *train oil*, laid on the trunks of trees, in rings or circles, by means of a brush, a few inches from the ground, will form a barrier over which snails or grubs, &c., cannot pass.

Cabbages, &c., may easily be guarded against the depredations of caterpillars by sowing a belt of *hemp seed* around the borders of the ground where they are planted; for it is a well known fact, that none of these vermin will approach the space so enclosed.

Destruction by the fly in turnips may be prevented by dividing the seed intended for one day's sowing into two equal parts, and putting one part to steep in a vessel containing soft pond, or ditch water, the night previous to its being used. Next morning mix the whole together, and add to each pound of seed, two ounces of *flour sulphur*. This mode will ensure two successive growths, and the fly will not touch them. It has been adopted with success for many years by the intelligent farmers in the south west of Scotland.

By the following method an eminent horti-

culturist near Derby, never lost a seed by vermin, although they sometimes burrowed in a direct line with almost every row of peas, beans, &c., that he sowed; it consisted merely in steeping the grain or seed for three or four hours, or during a sufficient time to penetrate the husk, in a strong solution of the sulphuret of potash, commonly known by the name of *liver of sulphur*.

The American farmers effectually prevent the *blight* or *mildew* from injuring their orchards, by rubbing *tar* well into the bark of the apple-trees in the spring season: this is done about four or six inches wide round each tree, and at about a foot from the ground. Abundant crops generally follow this treatment.

The *gumming* of fruit trees is to be prevented by forming a compost of horse-dung, clay, sand, and tar. This applied to the trunk and stems of fruit trees, after having been properly cleansed, will prevent that spontaneous exudation called gumming, which is so injurious to their growth.

The growth of *weeds* around fruit trees recently transplanted does the latter much injury, and diminishes the fruit both in size and quality. Sonnini, in his *Bibliothèque Physico Economique*, states, that to prevent this, the German horticulturists and farmers spread on the ground, around the fresh transplanted trees, as far as their roots are supposed to extend, the *refuse stalks of flax*, after the fibrous parts have been separated. This treatment gives them surprising vigour, as no weed will grow under flax refuse, and the earth remains fresh and loose. Old trees treated in the same manner, when languishing in an orchard, will recover and push out vigorous shoots. In place of flax stalks, the leaves which fall from trees in autumn may be substituted; but these must be covered with waste twigs, or other more weighty material, to prevent the wind from blowing them away.

Mr. Macdonald, of Scalpa, in the Hebrides, having had his corn, &c., considerably injured by mice and other vermin, put at the bottom, near the centre, and at the top of each stack or mow, as it was raised, a handful of the stalks of *wild mint*, gathered near a brook in a neighbouring field: he never afterwards had his grain consumed. He tried the same experiment with

his cheese and other articles kept in the dairy, viz. by laying a few leaves, green or dry, on the articles to be preserved from their attacks, and with equal success.

To prevent *hares, rabbits, and rats*, from barking young trees and plantations, take any quantity of tar, and six or seven times as much grease, stirring and mixing them well together; with this composition brush the stems of young trees as high as the hares, &c., can reach. This will so effectually prevent them from being barked, that if an ash plantation were made in a rabbit warren, the same would remain untouched.

THE TURNIP FLY.

In the year 1830 the following series of questions were issued very extensively by the Doncaster Agricultural Association:—

1. In what sort of weather have you generally observed the fly do most mischief to the turnips?
2. At how early a period of the year have you ever known the fly begin to attack the young turnip plants?
3. Is there any period of the year after which you have ever known the fly to attack the young turnip plants?
4. Have you known instances where the fly has attacked turnips after they have put out the rough leaf?
5. When this was the case, were there any peculiarities in the season or weather?
6. Have you observed that the fly was more destructive on one kind of soil than on another? State the soil on which it has been most destructive.
7. Have you observed that the nature of the manure used has tended to increase or diminish the injury done by the fly? State the nature of the manure which you think tends most to diminish the attacks of the fly?
8. Have you observed the fly to be more prevalent in broad-cast than in drilled turnips, or the reverse?
9. Have you ever tried any method to prevent or to cure the damage done by the fly? State what, and the result.
10. Have you ever made any observations as to the mode in which the turnip fly is generated? State what these observations have led to.
11. Is it your opinion that the fly is more prevalent now than it used to be? If so, can you account for this, and how?
12. State any general observations you may wish on this subject.

From the answers to which, it appeared that the plant is attacked by the insect *in the perfect state*, as soon as it is up, and the first leaves being devoured, the plant immediately dies, and that whether the seed be sown early or late, it is the same. The Committee of the Don-

caster Society recommended in their Report, or rather in the Appendix,

"That, most effectually to insure the speedy growth of the plant, the land should be kept in the best possible state of cultivation.

"That the fallow should be completed as early as possible, so as to give an opportunity for choosing a favourable season for sowing.

"That the system of ridging the land with manures under the rows, and drilling on the ridge, be in every possible case adopted.

"That the most favourable opportunity for ridging be chosen, particularly that the land be not ridged in too dry a state.

"That, as soon as the land is opened for the manure, it be laid in the ridges formed, and the seed drilled in immediately. The quicker these operations follow each other, the better chance there is of a good crop.

"That the manure chosen be adapted to the soil, and such as is likely to insure the speediest growth of the young plant; and that a full quantity be allowed.

"That the seed be not deposited in the manure; but the manure be thinly covered with soil, and the seed drilled in the soil.

"That a very liberal allowance of seed be given; as much as 3 lb. or 4 lb. per acre for drill, and 6 lb. or 7 lb. for broad-cast; and that the seed be of one year's growth."

But it is pretty evident that as yet little progress has been made in getting rid of this pest.

SMITH ON THE PEACH AND NECTARINE.

WE have in a former paper shown pretty clearly, from good authority, that the nectarine was originally a sport from the Peach, and the culture is much alike for both fruits. The author of a small work, just issued from the press, on the growth of the Peach, is the well known author of a "Treatise on the Cucumber and Melon," and there are many good lessons contained in the unpretending volume. The following specimens shall speak for themselves for the present, but we shall recur to some particular points of practice by and by.

"In forming a collection of peach trees, say of twenty-four trees of the very best sort, and which will ripen their fruit in succession, the proportions may be, Early Anne, 1; Grosse Mignonne, 3; Royal George, 2; Double Montagne, 2; Noblesse, 2; Malta, 1; Royal Charlotte, 2; Bellegarde, 4; Barrington, 3; Late Admirable, 4. Should any of these not however, agree with the soil and situation, or should more be required at any particular season, then the proportions may be varied, or some others introduced."

This is a valuable list, and although ten names only are given, it may be affirmed without the least fear of confutation, that from the most extensive list published in this country, viz., For-

syth's, an equal number of other sorts, containing the like excellent properties, cannot be selected; that is, supposing synonymes appended to the Noblesse and Late Admirable, by Mr. Thompson, really belong to them, a supposition, however which, at least, is very doubtful.

SCIENTIFIC PRINCIPLES OF BLOOMING.

BY JAMES RENNIE, M.A.

It has been recently fancied, and taught as *profound* science, that "a flower is in reality a stunted branch, that is, one the growth of which is checked, and its power of elongation destroyed." Hence it is inferred that "whatever tends to produce excessive vigour" in a plant will prevent the formation of flower buds, and therefore I think it is logically fair to infer, that whatever tends to diminish the vigour and cause weakness in a plant, will promote the formation of flower buds—doctrines which every reader must see to be equally absurd in theory and erroneous in practice.

The facts and principles founded on experimental science are, that the production of flowers and fruit being the natural design of the growth of plants, every thing which tends to increase their strength, which in trees is expressively termed ripening of the wood, must promote their disposition to bloom; and every thing, on the contrary, which tends to cram them with crude undigested sap, or otherwise to produce disease, must be unfavourable to the production of flowers. Flowering plants must not, therefore, be starved in order to produce theoretical "stunted branches," nor must they be over fed, as a superfluity of dropsical branches and bloated leaves will be the consequence; but so nurtured as to produce vigorous healthy growth.

Mr. Neill remarks, that when a plant is checked by frost, it will come sooner into bloom; and Mr. T. A. Knight found that very dry air had a similar effect with cold, so as to cause even the scions from the roots of pine apples to show fruit. This arises evidently from the pulp being concentrated instead of being expanded in the production of new leaves and branches, while, perhaps, part of the effect may be owing to increased excitability.

On this principle, the early potato, which does not flower freely, may be made to do so, as T. A. Knight discovered, by removing the tubers, and, on the other hand, the tubers are increased in the late sorts by picking off the flower.

The greater the quantity then of good healthy pulp which can be prepared by the leaves, the more really (not theoretically) vigorous and healthy will the plant become; and as flowering and fruiting exhaust a great quantity of this pulp, and of course tend to weaken the general system of the plant, it follows, that the artificial prevention of flowering must preserve in the plant the digested pulp which would have gone

to nourish the flower and the fruit. Thus by pruning off the luxuriant shoots of melons, &c. the pulp induces the shoots to spring into flowers and fruit.

Upon this principle is founded the practice of treating bulbs so as to cause them to bloom vigorously, by cutting off the flowering stem as soon as it appears, in some cases, so as to have the blossoms evolved when placed in water, taking care to encourage the growth of the leaves by rich soil and free exposure to air and sunshine. In this way, the greatest possible quantity of strong pulp is stored up in the bulbs, and luxuriant blossoms are produced the succeeding season. The practice, consequently, of some unskilful gardeners, of trimming off the leaves of snow-drops, crocuses, and tulips, after the blooming is over, for the purpose of rendering a border, or a bed neat, is very bad, and it is not much better to tie up the leaves, as is also preposterously done; for in this way they cannot be duly exposed to the air and the light. The same principle will apply to all other flowering plants.

When a flowering branch, or stem, has been produced, and has begun to show the flower buds, it must be considered, that it can only blow fluently in proportion to the quantity of healthy pulp, either previously in the branch, or from time to time prepared by the leaves of that branch. Consequently, if there are two or more flowers on the branch, each will require its due proportion of food; but, if one or more of these be artificially removed, all the spare pulp will go to feed the one, two, or more blossoms which may remain. On this is founded the practice of thinning out the flower buds from the bunches of Auriculas, Polyanthus, Chrysanthemums, and other plants, in order to increase the size and beauty of those which are left to expand.

It is in consequence of the same principles, that free exposure to light and air is indispensable for producing fine flowers, inasmuch as they depend for nourishment on the pulp, which, without these, cannot be formed. The vivid colours and pleasant odour of flowers depend on the same causes, for, in the shade, these are both feeble; and when flowers are blown in the dark, they are both nearly, or altogether, absent.

SCIENTIFIC PRINCIPLES OF FRUITING.

The same principles which I have just laid down, with respect to blooming, apply so precisely to fruiting, that it will be unnecessary to repeat them here; but, besides these, there are some circumstances peculiar to fruiting which it may now be useful to consider. It will not be necessary for me to tell any reader endowed with common sense, that the doctrine of a fruit, like a flower, being "a portion of a stunted branch," or "a number of metamorphosed leaves," now promulgated as science, is a baseless and absurd fancy.

What is termed the *setting* of fruit, that is, its appearing after the fall of the blossom in its proper form and gradually increasing in growth, depends on the previous vigour of the blossom and due fecundation. If the blossom has not been supplied with a sufficient quantity of pulp for its proper nourishment, it cannot of course perform its functions so as to form the fruit; and even if the supply of pulp has been ample, if the weather be unfavourable, fecundation cannot take place.

In order then to have fruit *set* well, the bearing branch must be healthy, and the weather at the time of blooming must be favourable. The anthers must discharge their pollen on the summit of the pistil, otherwise no fruit can form; and this may be prevented by cold or wet weather, as cold prevents the opening of the anthers, and the discharge of the pollen, as well as the formative action of the pistil, while rain either prevents the opening of the anthers, or if they do open, it dilutes or washes off the pollen so as to render it inefficient.

When any of these causes have operated, as soon as the flower falls or withers, the fruit, instead of *setting*, shrivels and soon falls likewise, because the vessels, which proper fecundation would have evolved to attract and circulate nutrient pulp, have not been acted upon. The reader may, from these ascertained principles, devise means for protecting valuable fruits from cold or wet at the period of fecundation.

WEEKLY JOURNAL OF GARDENING.

In the Greenhouse all the pots should be occasionally examined, to see whether the drainage is complete; for if the soil is wet and heavy, the health of the plant will soon be affected. In this case the ball of earth and plant should be taken out by turning the plant downwards, and tapping the edge of the pot against a table or shelf. If the drainage be now removed from the bottom of the ball of earth, and a clean pot a trifle larger be procured, the plant may be repotted without disturbing it at all; but if the wet shall appear to have turned the roots black and soft, the mischief is not so easily remedied, because the earth must then be all removed from the heavy roots, and the diseased or rotten parts be taken away, and the plant be repotted in fresh soil. To meet this diminution of nourishment afforded by the lessened root, the plant must be cut in very much, and it may recover, but the drainage of potted plants cannot be too often examined, and the moment one pot appears to keep the soil damp when others are dry, you may make up your mind there is something wrong, and set it to rights before any serious effect is produced in the health of the plant.

CAMELLIAS as they go out of bloom should be continued moist, for their growth at this critical period should not receive a check. Indeed, when there is a convenience for it, we should recommend an increased temperament, such as removing them to the coolest part of the stove, but there is no necessity for this. The only precautions required are that they shall be where the frosts, which frequently come on suddenly in the night during April and the beginning of May, cannot affect them, and that water shall be liberally supplied during the growth of their new branches, and this renders it the more important that their drainage should be clear.

DAHLIAS.—All those which are established in pots, and are sufficiently grown, should be placed in the greenhouse, or in cold frames to harden them off, two or three weeks previous to planting out. Dahlias intended to be bloomed in pots, should be repotted in pots size 48, and be placed in frames, so as to be readily covered up warm of nights, to protect them from frost. The old tubers of those sufficiently propagated may be thrown away, or be parted, as they may be wanted or not. Those who intend to buy new ones should give their orders at once; and if they do not know which to order or which to buy, they should turn back to our first volume, and see the description of the new ones coming out. For those who have no old ones, and who wish to begin growing them, it may be worth while to select from the following show flowers the colours that best suit them, for after a dozen is named the rest are average quality, to the amount of scores:—

Sparry's Admirable, rosy purple.
Admiral Stopford, dark maroon.
Andrew Hofer, lighter maroon.
Burnham Hero, dark crimson.
Beauty of the plain, white, edged with lilac.
Bedford Surprise, shaded rose.
Bishop of Salisbury, puce purple.
Bishop of Winchester, crimson purple.
Pamplin's Bloomsbury, buff.
Bridesmaid, white, tipped with purple.
Hodge's Competitor, crimson.
Conservative, rosy purple.
Dowager Lady Cooper, beautiful pale rose.
Duchess of Richmond, bronze pink.
Catleugh's Eclipse, bright scarlet.
Holmes's Exquisite, white, laced with purple.
Highgate Rival, crimson.
Hope, curious rose.
Indispensable, violet purple.
Le Grand Baudin, rosy lilac.
Lewisham Rival, white.
Maid of Bath, white, tipped with purple.
Wheeler's Maria, bright rose.
Metella, dark purple.

Phenomenon, white, edged with rose.
 Pickwick, dark purple.
 President of the West, peuce.
 Hudson's Princess Royal, amber and pink.
 Dod's Prince of Wales, yellow.
 Coxe's Defiance, yellow.
 Regina, fine crimson.
 Rouge et Noir, shaded maroon.
 Sir F. Johnstone, rosy purple.
 Springfield Rival, dark crimson.
 Ansel's Unique, yellow, tipped with red.
 Widnal's Eclipse, scarlet.
 Ditto Ne-plus-ultra, shaded crimson.
 Ditto Queen, peach blossom.
 Conqueror of the World, amber and pink.

Those who have not got these should buy any which they do not possess. There are others equal to some of these, but, whether for borders or for showing, they cannot be much out of the way in growing the whole. Nurserymen may vary a little in their prices, but the whole sorts could be had, we think, for fifty shillings; however, not a day should be lost in ordering Dahlias. In addition to these, there are two flowers which would add to the chance of success at a show—the one is the darkest show flower out, and the other the whitest flower out, Essex, Triumph, and Antagonist. Those who go beyond these must refer back to the descriptions. Low, of Clapton, Brown, of Slough, the Metropolitan Union, Widnal, of Granchester, or any other general nurseryman, can serve the whole, or any part of them. If any of the above sorts do not bloom kindly in particular situations (and some have complained greatly of them), it will be worth while to have in a plant from a new source, and try again. This point is too much neglected. All Dahlia growers should, by exchange or purchase, renew sorts which appear to go back.

By this time all the herbaceous plants and bulbous rooted plants will have made their appearance above ground in the borders and beds of all gardens, and you may fork over the surface without danger of injuring any thing. Wherever there are vacancies you may sow seeds, or plant out flower roots. In the vacant places, near the front, you may sow dwarf annuals, or leave them for planting out the seedling dwarf plants raised in heat. In the vacancies further back, say two or three feet from the edge, sow patches of Sweet Peas, Coreopsis, Hibiscus Africanus, Convolvulus Major, tall Rocket Larkspur, and other taller growing annuals, or, if you have any raised in heat, plant them, or turn out pots of them, which will flower earlier than if only sown now. In addition to this, you may plant out Sweet Williams, Double and Single Rockets, Polyanthus, Canterbury Bells, Scarlet Lichnesses, double and single Phloxes, dwarf and tall, and other perennials. Ten-week Stocks, Balsams, Dahlias, China Asters, and the like, may be

planted out later, but leave vacancies for these in this present dressing of the borders. Plant out Verbenas, Fuchsias, Geraniums, Heliotropes, and other clump plants, in beds or in clumps, covering them with flower pots the first week, or, if you would avoid that trouble, merely dig up and dress the beds and clumps, and leave the actual planting out another week.

Roses.—The last portion of Roses intended to bloom late may be now pruned back to single eyes, or two at the most on each branch. The buds will have shot out very much from the end to a considerable distance down each branch, but the back, or lower buds of all, will hardly have started, consequently, it throws back the flowering very considerably to make a late pruning of one portion.

April 29, 1843.

THE PRACTICAL GARDENER'S NOTE-BOOK.

RHODODENDRONS.—This winter I have lost all my hybrids, between Maximum and Arboreum, while those between Caucasicum and Arboreum have hardly been touched.

EARLY POTATOES.—Let your ground (a light sandy loam, if possible) for the early potatoes be laid out in trenches, like those for celery, about one foot wide, nine inches deep, and thirty inches asunder—each to point, as nearly as possible, north and south. Dig into each a good proportion of semi-decayed leaves, a year or two old; and thus, leave the surface soil of each trench five or six inches below the level of the ground, the earth out of the trenches standing in sloping ridges on the sides of the trenches. Strain a line down the centre of a trench; place the tubers of the ash-leaved kidney *whole*, five inches apart along the line, the lower ends just so deep as to support them upright, the rose or crowns being uppermost. Draw earth from each side of the ridges till it cover the potatoes to the depth of one inch and a half, and finish with an inch of leaf-siftings, or any light fine litter. Ash-leaved kidneys have few eyes, and rarely admit of being cut; the early frame, the early Scotch, &c., may be divided; and in that case, each cut side might with advantage be dipped into air slaked lime, which will absorb the juice, and defend the pulp from grubs. As the shoots become visible, and advance, draw fine earth from the ridges against them, especially on cold clear evenings; and repeat the earthings till the bed be level. The potatoes will then not be deeper than in the ordinary plantings; the ridgings or earthings-up will be completed, and one digging between the rows will finish the business, leaving the ground in a free condition, open to the rain, and to the power of the sun. I have planted as late as April, and succeeded well.

A GOOD AGE.—It is now March, 1838, and I have just seen a man in his 102nd year, in the enjoyment of good health, and working in his son's garden, and he worked as well as a man of forty: his name is Ruckland, and he is living at Taplow Common.

PERSIAN MELONS.—This fruit continues to be comparatively unknown, considering it surpasses all varieties of the thick-skinned, ordinary melons, in every quality which constitutes excellence; its juice is flowing, abundant, and saccharine: the flavour pure and delicious. The fruit has little of that diffusible odour, which, if the melon be kept in a room for some days after it is ripe, pervades the house; and, what is worse, becomes every hour more rank and offensive. A common fleshed or rock melon is coated with so thick a rind that it must be pared to the eighth of an inch before the pulp can be eaten. The true Persian melons have a rind scarcely so thick as parchment, and the pulp below it is very deep. Of this tribe there are many varieties; but I propose to restrict the following remarks to that called Housaine, or Housainee, of which there are two sorts: the first and largest, the *striped pink fleshed*; and the second, the *white fleshed*. The former is a noble fruit, of great beauty—its skin is firm but thin, and the fleshy cellular substance under it is of a bright green, to a little depth, the tint gradually softening off till it becomes of a pale salmon-coloured buff: the mass of the flesh is of the latter colour, so that the term variegated might with justice be employed to express the tint of the flesh. The green portion is not quite so tender and juicy as the buff-coloured, but the whole mass may be eaten, leaving nothing but the seeds, and the very thin external rind. The flavour is always delicate, the odour like that of a pine-apple, and the fruit may be long kept free from decay.

A FACT FOR NATURALISTS.—In the neighbourhood of Bierley, there was a tree which, a few years ago, was split with lightning. An iron chain, which was fastened round it, in order to restore it to its pristine form, is now covered with bark, and the tree is in good condition.

A SUBTERRANEAN FOREST.—A letter from Rouen mentions that, on digging in the basin de St. Valery for the foundation of a drawbridge, a kind of forest has been discovered about 100 feet below the level of the soil. Vines were likewise found, and the bones of wild oxen, together with the horns of stags. Such was the state of preservation in which these subterranean trees were found, that in many instances the nuts were still hanging to the bushes.

EXTRAORDINARY LARCHES.—In the garden of Monzie are five larches, remarkable for their age, growth, and symmetry. They are coeval with the celebrated larches from Dunkeld, hav-

ing been brought along with them to Scotland from the same place, and are now superior to them in size and beauty. The tallest measures 102 feet in perpendicular height; another is 22 feet in circumference at the ground, and at the distance of 2½ feet, from the ground 16 feet, and it throws out branches to the extraordinary distance of 48 and 55 feet from the trunk.

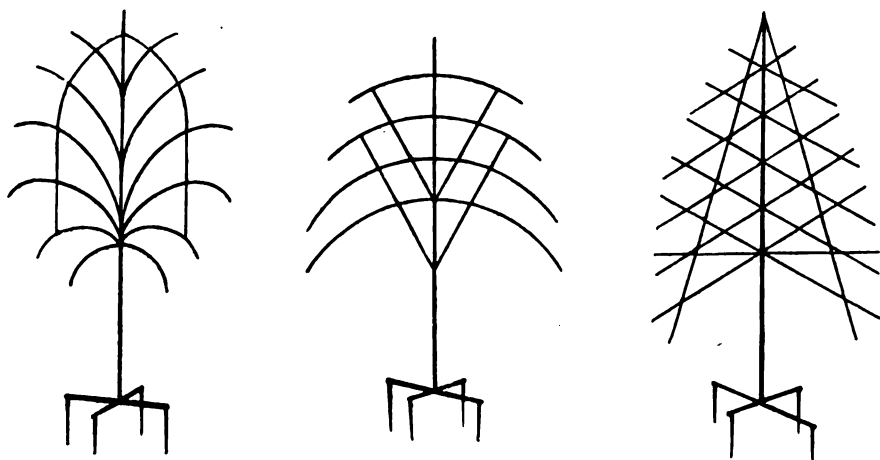
TO KEEP CAULIFLOWERS THROUGH THE WINTER.—Towards the end of autumn, I make a bed or beds, according to circumstances, of moist sand, in any cool house that will exclude the frost. The beds should be four inches deep. Having previously planted a greater number of cauliflower plants than would be required at the time they are to come into use, I take the surplus, when in a good condition, and cut off their roots, leaving a stalk about three or four inches long; I then cut off all the leaves, except the innermost row; and, after shortening these, I insert the stalk into the sand-bed, and cover the cauliflower with a flower-pot. In this manner a large quantity may be contained in a small space: for example, a bed twelve feet square will hold 288 heads, allowing six square inches to each head. Again, by taking those plants that are not in flower when the frost sets in, and preserving them, in a growing state, in any house or shed where light is admitted, and which will preserve them from a severe frost, these will come into use about the month of January; and, by cutting them, and putting them in the sand-bed, they will continue fit for use till the spring. In this way I have kept cauliflowers to the end of April. It will be necessary, from time to time, to examine and cut off any decayed part that may appear.

EFFECT OF CLIMATE AND CULTIVATION ON VEGETABLES.—The myrtle tree, which with us is a small shrub, grows in Van Dieman's Land to the height of 200 feet, and has a trunk from 30 to 40 feet in circumference. The wood resembles cedar.

THE ALDER.—This is much valued in Germany for its great usefulness. Its flowers constitute the panacea of the country and town people over the whole north of Germany. They are carefully dried in airy rooms, but so that the rays of the sun cannot fall upon them. Two flowers, upon which a pint of boiling water is poured, give a tea of an agreeable taste and flavour, which, for its diaphoretic qualities, is considered as the best remedy for all disorders of the stomach, of colds, coughs, hoarseness, influenza, and all rheumatic complaints.

CATS.—If you are plagued with these animals they will destroy your garden, or you must destroy them, give them fish rubbed over, or peppered, as it were, with arsenic.

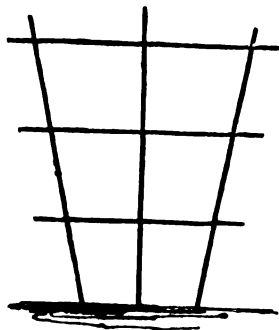
SLUGS.—I have found nothing more effective than laying down cabbage leaves and gathering them up every morning. I have found the under part covered occasionally.



TRAINING AND TRELLISES.

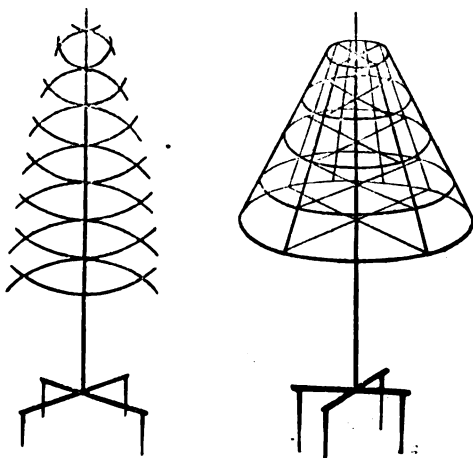
THE vast additions that have been made of late to our collections of climbing plants has almost created a new branch of culture. For plants which require support, give rise to many injurious contrivances, and afford such large encouragement to more, that the same plant may be made to appear totally different by merely varying the frames or trellises on which they are allowed to grow. The first thing, however, to consider in training a plant is the nature of its growth and bloom. Those which like the *Ipomea horsefallii* grow to an enormous length, and bloom only at the ends of its long twining shoots, must be trained very differently to the *Tropeolum*, which blooms the whole length of its branches, and plants which merely grow and hold themselves up by their leaves or tendrils, like the Passion flowers and the vine, must be treated very differently to others which twine round whatever is placed in their way, like the scarlet bean. In all cases, however, it is desirable to contrive that the frames or trellises to which plants are to adhere, shall be moveable with the plant when it has to be shifted from one pot to another. For this purpose we recommend that the trellises be firmly fixed into a cross piece, bent down at the four ends, to go into the pot. The diagrams at the head of the present article explain this, except that the proportion turned down to go into the pot are not indicated correctly. They should be long enough to reach to the bottom of a pot of the size twenty-four, and they will then shift with the plant successively to a sixteen, a twelve, and, if necessary, to larger sizes. The fastening of this kind of trellis to the pot, if indeed any fastening beyond sticking into the soil be necessary, is as simple as possible. A ring to fit under the rim of the pot may be bulged out, so as to stand away from the side in four places, and enable the operator to put wire through between the ring and the pot, and round the

centre standard, or the bends of the cross, and tighten it completely; but we have grown many of the heaviest and most unmanageable plants on trellises, with no other support than the thrusting of the four points into the soil. The fanciful designs for these trellises are so numerous, that we might fill a volume with them, and not have two alike; but two-thirds of them we have seen in print would be ugly and useless when covered with well grown plants. In all pot culture, and indeed all culture, some regard should be had to natural appearance; and when this is abandoned for any thing fanciful and unnatural, there should be some meaning in the design, or it should be simply straight sticks, so disposed as to affect nothing but holding up the plant. In the formation of crowns and coats of arms, or nondescript ornaments, the trellises often look better without the plant than with it; but if the design be intended to have a good effect, and yet be artificial, nothing is so good as an architectural device, which gives an appearance of plants running up pillars or fronts of buildings. The following are the most simple kinds of supports, and can be made with sticks and wires, or even cords, in which case there would be simply a mass of plant and flower, grown as geraniums were grown of old.



Those at the head of the article are more like trees, and a variety of climbers so trained would be effective and natural, but they are calculated to show only one face to the plant, the trellises being flat; other designs might be suggested, in the form of natural trees—that is to say, showing a complete head all round instead of a flat surface; and this would be more frequently adopted, but for the extra skill and trouble required to cover them well and bloom them all round alike. This, however, is not difficult to accomplish, if early attention be paid. The first thing to secure, in the cultivation of climbing plants, is to cover well at the bottom of the device, for if that be not done at first, it is difficult to accomplish afterwards. If there be a single stem next to the pot, the first growth of the plant will be trained close to it all the way till it reaches the under part of the device formed at the top of it; but it will be dangerous to depend on a single shoot of the *Trepeolum* and other slight plants, and it is better to cut back the first growth, that two or more may shoot up in its place; for, if there were a dozen shoots to grow up the single stem or standard of the trellis, they would be the more effective when spread outwards at the bottom of the broader part or head of the device. The shoots should be trained out, right and left, at the lowest branches of the trellis; and, when they reach the end, they should be turned back again, close down to the one below, and by these means the thickness of the under growth would be secured, after which there is no difficulty in covering the remainder. The delicacy of the *Tropæolum Tricolorum* renders it more difficult to manage them than almost all other climbers; and the most effective way of securing rapid growth, is to fasten one end of a ball of thread to the trellis, and the other, in a sloping direction upwards, to a peg in the upper part of the house. The shoot will grow fast; and when it has gone a few feet along the thread, you have nothing to do but to wind or fasten the thread on the trellis, where you wish it to go, and again leave the end of the plant free to make a fresh growth, to be in turn put on the device, and again to furnish a guide to the end of the shoot. The operation of the free air, to which the growing part of the plant is exposed, is much more favourable to growth than the ordinary mode of allowing the growing part to hang down, or cling, as it will, to some part of the trellis, where it is not wanted, and get damaged in the endeavour to set it right. When the device requires the plant to be all round alike, it should be turned every day, or placed where the light and air are equal all round; where it has only one face, it should be placed with that face to the light and air, and the object will be quite as easily accomplished. The strong growing plants, like the *Ipomeas* and *Passifloras*, require in general round trellises, and should be wound round close

to the bottom, and each coil should not be more than an inch above one another; for unless the bottom is covered at first, it is difficult, if not impossible, to accomplish it afterwards. Nor should the plant be allowed to grow much without fastening it, for if there be much growth allowed, the leaves will turn the wrong way when they are fastened in their places, and will never come so well as if placed there at first. The different varieties of trellises now submitted are simple—they may be made cheap—are sufficiently strong for most purposes, and are easy to cover, all which points are important to the beginner, for whose especial information we offer our remarks.



ON THE DRAINAGE OF PLANTS IN POTS.

THE subject to which I would call your attention, is the drainage of plants in pots, which those who have to do with their cultivation are aware to be a matter of importance.

The system of draining plants in pots in general use, is to put one large potsherd over the bottom hole of the pot, and on this, a quantity of potsherd broken small, with a little rough turfy soil; and the plant is then supposed to be thoroughly drained.

But I think this system admits of some improvement; for the object is not only to afford drainage to the plant, but also to prevent the worms from penetrating at the bottom of the pot; and if this is not done, the best of drainage soon becomes choked up, to the very great disadvantage of the plant.

The plan that I would suggest, is this; for the uneven potsherd, at the bottom of the pot, I would substitute a circular piece of slate; this will prevent the worms from penetrating at the bottom of the pot, and at the same time, will allow the superabundant water to pass off: instead of the pounded potsherds, I prefer using small pieces of slate; they lay closer than the potsherds

on account of their thinness, and in my opinion they retain moisture longer, and also sufficiently allow the superabundant water to pass off: for the rough mould, I substitute moss, which has, I think, these advantages; in shifting the plants, it adheres to the roots much better than the rough mould, and consequently, they are not so liable to be disturbed, by the breaking of the ball, which is too often the case where the rough mould is used; and a portion of the moss remaining among the roots by its gradual decay, will be more beneficial than otherwise. Again, while it allows the superabundant water to pass off, it quite prevents the mould from being washed to the bottom of the pot, thereby putting aside all fear of the stoppage of water which might arise from the looseness of the slate; it also retains moisture, which is thus regularly supplied to the roots, in small quantities. I think moss is one of the most important things, in the drainage of plants; and I would not recommend that the slate should be used without it. In carrying out this plan into practice, see that there is no unevenness in the bottom of the pot, to prevent the slate from laying close; and also that the pots are washed clean, and are dry when used: if by chance, there should be any worms breed in the mould, in which the plants are growing, a little lime water poured over them will quickly destroy them.

The way in which I make the slate circular, is by fixing in a bench, an upright piece of wood with a circular ferule on the uppermost part, and chipping away on this, the edges of the pieces of slate: these chippings are used in the place of the broken corks.

Such is the plan which I recommend from experience of its advantages, and if I have made one observation that will be serviceable to any of the members, I shall feel great pleasure; if not, I hope it may be considered that it was my endeavour to do so.

(Read, January 5th, by Mr. Field, at the Regent's Park Gardens Society for mutual institution.

CACTI;

REMARKS ON THEIR GEOGRAPHICAL DISTRIBUTION AND CULTIVATION—BY MR. D. MAHER.

THE collection and cultivation of the numerous species of the genera constituting the natural order *Cactaceæ*, has been the means of introducing to our notice many new and singularly grotesque forms of vegetable life; and their culture has become nearly as fashionable as that of the equally splendid and grotesque family of *Orchidaceæ*: over the latter they possess the advantages of requiring less room, and of being more easily and economically cultivated; whilst the beauty and profusion of the flowers of some of the more common kinds, renders it no easy task to name their superiors in splendour.

According to the best authorities, this order

is strictly American. *Opuntia vulgaris*, although found in North America, is also met with on the road side between Rome and Naples; but Dr. Lindley states, that it is no doubt a naturalized plant, and by no means really wild. *Rhipsalis salicornoides*, also, though marked in the catalogues as an East Indian, is really an American plant, and no doubt seems to exist that wherever plants of this family occur in an apparently wild state (excepting in America) they have been introduced and naturalized. In America, they extend over an immense stretch of country; a small stunted *Opuntia* being found near the Saskatchewan river, and in the Rocky Mountains, in about 49 deg. north latitude, and *Cereus Chiloensis*, on the other hand, in the Island of Chiloe, in 43 deg. south latitude: how much farther South they may extend I am unable to state; but most likely the dry plains of Patagonia, several degrees farther south than Chiloe, produce some species. The species of *Mammillaria*, *Echinocactus*, and *Opuntia*, abound in the dry levels and barren hills of Mexico and Chili, and in similar situations in the intervening countries. The rambling *Cereuses*, and the splendid *Epiphyllums*, generally occur in the borders of woods and rocky places, where they receive more moisture, and the *Pereskias* delight in the hot and damp woods of Guiana and Brazil, and in similar habitats. The large torch thistle forms complete woods on the barren uplands of Brazil, often to an extent of several miles.

This natural order is eminently wholesome; the fruit of all the species contain a pleasant acid, and when of sufficient size and succulency may be eaten. The fruit of *Pereskia culeata* is much used in the West Indies, where it is grown under the name of Barbadoes Gooseberry. *Cereus repandus*, *C. lanuginosus*, *C. Peruvianus*, and *C. triangularis*, are also sought after for their fruit, which is much used, especially that of the latter species, which is called the Strawberry pear, and is considered to be the finest fruit of the order. The fruit of *Opuntia vulgaris* is also much esteemed, and that of *O. cochinillifera* is of some interest and importance, as being productive of the best cochineal, and it is on that account extensively cultivated in Mexico and Guatemala.

The botanical arrangement and division of the order may be regarded as being yet imperfect, and there is little doubt but that many alterations will become necessary, when the plants now in the country shall have more completely developed their forms and blossoms.

Cactaceous plants may be divided into three sections with reference to their treatment; the first to include the rambling *Cereuses* such as *C. grandiflorus*, *C. serpentinus*, and their allies; the second, those of free flowering habits, such as the *Epiphyllums*, *Cereus speciosissimus*, &c.; whilst the dwarf and grotesque *Echinocacti* and

Mammillariæ may be advantageously assimilated in their treatment.

The former succeed best if trained to the rafters of the stove; which is a situation infinitely preferable for them than the back wall, which latter is too frequently their station: here they can extend to a size sufficient for flowering, and receive the full benefit of heat and light from the sun. The *Epiphyllums*, and those of allied habits, require a richer compost, more water, and a summer ripening out of doors. The melon-shaped *Cacti* want an airy situation, and every ray of sunshine our climate is capable of affording them. They all require thorough drainage, great attention in watering, free exposure to light, and a hot and dry exposure to ripen them, and fit them for flowering.

To see the way in which Cactaceous plants are usually treated in the generality of gardens, one would hardly suppose them to be possessed of sufficient beauty or interest to render them worthy of any care; even the *Epiphyllums*, which are always in request on account of their splendour, are generally found fagotted up to a stick, large enough for a hedge-stake, the surface of the mould covered with moss, and if the contents of the pots in which they are planted is examined, it will frequently be found to consist chiefly of lime rubbish. *Cereus grandiflorus* is seldom met with in a healthy, and still less frequently in a flowering state: surely these fine plants are worth a little more care and attention; a little of the trouble generally lavished on Egg plants, Amaranths, &c., as well as on many newer introductions of less beauty, would grow the *Cacti* in good style, and certainly give more satisfaction to most plant fanciers.

A good mellow loam, white sand, and potsherds, are the principal requisites for a compost for most of these plants. Manure of any kind must be sparingly used, except for the *Epiphyllums*, and other free-growing kinds; but even with these, perhaps an occasional watering with liquid manure would be preferable, for crude manure, if mixed with the compost, would be liable to retain moisture too long, and retard their ripening in autumn. Lime rubbish is also liable to this objection, as it imbibes and retains moisture very readily, and should therefore be used very sparingly. It is no doubt this property in lime rubbish, which is so favourable to the growth of *Mosses*, on composts in which it is used, as may be seen in any collection of succulents which have been in the least neglected. A sufficient drainage of potsherds to secure the plants against the least chance of damp, and to allow the water to pass through freely, is of the utmost importance; and broken small, and mixed with the compost, they are of great use to *Melocacti* and all the smaller species. Another point, not sufficiently attended to, is to be very careful not to overpot even the strongest growing kinds.

When the *Epiphyllums* have done flowering, thin away the least promising of the old and young shoots, pot them into a good loamy compost, with less sand and more manure than for any of the other sections, and set them into a moderately warm house, until they begin to grow freely: an airy, but warm greenhouse, would be the fittest place for them, as if kept too close, no wood of any strength would be produced; as soon as they arrive near their strongest growth, reduce their allowance of water gradually, and when they feel firm, and have done growing, put them out in a hot place, exposed to as much sun and air as possible, but protected from wet; they will not shrivel even though water is withheld for a long time, or if some do, they will generally be found to be deficient of a proper supply of roots. Plants thus ripened will be found to flower well, and can be forced, or retarded, so as to produce their flowers for a considerable length of time.

Melocactus, *Echinocactus*, and *Mammillaria*, require a poorer soil, and very complete drainage. A little well-decayed leaf mould, good loam, and, if the loam is stiff, some sandy peat, and a good supply of sand and potsherds broken small, will be found as good a compost as can be had. Their roots are very fond of growing among small potsherds and pieces of broken freestone, and when the plants are growing freely, these soon mat themselves together about the drainage. Some cultivators cover the surface of the mould round the plants with small stones or white sand to prevent damp, but both plans are unsightly, and unnecessary, if a proper quantity of sand and potsherds be mixed with the loam. When it is necessary to shift any of these plants, if they are in soil they do not seem to like, shake them out, and clear away all decayed roots, being particular not to injure the neck or stem of the plant; put plenty of drainage at bottom, and also with the compost, spread the roots as well as possible, not allowing them to cross more than cannot be avoided, fill in the mould carefully and firmly to support the plant, water overhead to clear away any mould accidentally fallen on the crown, and set the plants on a stage or shelf as near the glass as possible, and over the pipe or flue, if that can be done. If this shifting is done in April and May, and they are placed in a hot close house, not too damp, and supplied moderately with moisture at the roots, they will in a short time commence growing rapidly, and such an alteration in their appearance will be effected as would surprise those who have only been used to the ordinary mode of treating them. As they get established, free air and a full exposure to the sun, with a gradual diminution of water, will prepare them for passing the winter in good order. On the first increase of heat, and application of water in the spring, those plants large

enough to flower may be expected to do so strongly, and perfect their seeds.

Opuntia, *Pereskia*, and *Rhipsalis*, will be found to succeed under similar treatment, the *Pereskias*, and more leafy *Opuntias*, requiring more water, and a richer soil than the others, if the intention is to grow the plants to their full development.

Seeds are produced freely by many species, and it is also generally to be found among the spines in the crown of imported *Echinocacti*, &c.; it should be sown thinly in well-drained pots, and very sandy loam; or in a covering of white sand above the loam, and kept moderately moist, in a very warm part of the house; they will soon vegetate and grow freely, and if an excess of moisture is carefully guarded against, they need not be potted when young, as in that state they are liable to sustain injury in removal.

Several plants of this order sport very much from seeds, especially the *Epiphyllums*; and many hybrid varieties are now grown: This interesting field for experiment, in which so much has been done of late years, is well worth the attention of practical men. We cannot expect to surpass the splendour of *Cereus speciosissimus*, or the beauty of *Epiphyllum truncatum*, or *E. speciosum*, but we may try to add more beauty to the flowers of *Mammillaria* and others, and thus perhaps even grace the form of some of the most grotesque: at the least, it would be worth knowing, how far the different genera will cross and intermix with each other.

The grafting of *Cacti* is so easily performed as hardly to require notice, were it not that some, entertaining an idea that the *Echinocacti* and *Opuntia*, do not emit a sufficient number of roots to support the plants, have produced such unnatural-looking vegetable monsters, by grafting them, that they have tended rather to lessen than encourage the cultivation of this fine family: imagine a middling sized *Echinocactus Eyriesii*, stuck on a wiry stem of *Pereskia*, like a drumstick stuck into a pot! A writer on this subject informs us that the graft will soon begin to form roots, and send them down the stem of the *Pereskia*, which they may be encouraged to do by tying moss around the stock: this fact shows the absurdity of grafting in this way; the *Pereskia* is incapable of transmitting a sufficient supply of nutriment to its graft, so that it is forced to exert its own power in endeavouring to obtain food by the emission of roots.

Epiphyllum truncatum succeeds well when grafted either on the *Pereskia* or on any of the *Cereuses*; and *E. speciosum*, if grafted on *Cereus speciosissimus*, and planted out in a conservatory, will grow and flower freely, making a fine contrast with the flowers of its stock, when both expand at the same time. *E. Jenkinsonii*, and its allies, also succeed in a similar way, but being stronger growers, they are not so suitable;

nor can it be urged that they require a foreign stem to lift them into notice.

Opuntia Braziliensis, *Cereus hexagonies*, and other strong growing sorts, are also used in stocks; but it is a pity to cut off the head of a plant for the purpose of producing a monster incapable of exciting pleasurable sensations, and only calculated to impair the enjoyment of the garden.

(Read September the 8th, before the Regent's Park Gardener's Society for Mutual Instruction.)

GENERA, SPECIES, VARIETIES, &c.

THE tyro in Botany is often puzzled when he reads of this *genera*, that *species*, the other *variety*, and all sorts of tribes, classes, and families. The attempt to explain them will, perhaps, be acceptable to many of our readers, and not offend those who do not require the information.

A genus, then, is the head of a family—say the genus *Pinus*, by way of example, which means the whole of the various kinds of *Pinus* that we know any thing about, and many that exist without our knowing them. The word genus will be the correct term to apply when we speak of them all: but in writing or talking we object to repetitions, and therefore apply terms which mean the same thing, as near as we can find them. Thus, if we were to say, "The GENUS *Pinus* is very extensive; it is one of the most beautiful *families* in cultivation, we hardly know a handsomer *tribe*." The words *genus*, *family*, and *tribe*, mean the same thing; but it reads and sounds much better than if we were to say, "The GENUS *Pinus* is very extensive, it is one of the most beautiful GENUSES, we hardly know a handsomer GENUS." Therefore, when we hear any one talk, or when we read of a *tribe* of plants, or a *family* of plants, it means the whole assemblage that are classed under one *genus*.

A species may be likened to the children of a family, John, Thomas, Richard, William, and a dozen more. It means different plants of the same family, with a very distinctive character, and which distinctive character is retained in the offspring. As, for example, there is a *genus* *Viola*, and there are very many species; two will answer our purpose as well as a hundred: one species is *Viola Odorata*—the sweet violet familiar to us all; another species is *Viola Tricolor*, which is the Heartsease; both are of the family of Violets, yet they keep very distinct. We never obtain the Heartsease from the seed of the common Violet, nor do we get the Violet from the seed of the Heartsease. Here then we have the *genus* or family *Viola*, and the species or children *Odorata* and *Tricolor*. Now let us describe varieties, which we cannot do better than by pointing out the thousands of different colours, forms, habits, and general

appearance of the Heartsease. They are all varieties of the *species* Heartsease and the *genus* Viola. We find endless changes, but no change to the common Violet. So among the common Violets, if we saved seed, and raised thousands, if there were by any possibility to be found among them Violets of all colours, we should find no Heartsease. Whatever varieties there might be, they would all be *varieties* of the *species* Odorata and the *genus* Viola. Such are the distinctions of genera, species, and varieties.

SEEDLING AURICULAS

SHOWN AT THE SOUTH LONDON FLORICULTURAL SOCIETY.

MATILDA, exhibited by Mr. Dickson, a round well-proportioned flower in all but one particular, the tube is too large, and the paste too narrow. If a little could be taken off the one and added to the other, it would be a first-rate variety. The paste is very nearly a complete circle, and the ground colour and edge are well-proportioned. The paste is exceedingly fine, and the pip opens flat, moreover the truss is good, and, notwithstanding the size of the tube and its very middling colour, we hardly know a variety that will bear to be shown against it when bloomed well. It is an acquisition to our very best collections.

COMET has a starry white, conspicuously so, and the ground and edge are, as is almost always the case, starry to match. The truss is very good, and the pips open very flat; we can imagine it in perfection a showy variety, and an excellent stage flower, but it would require a better-natured judge than ourselves to give it a prize. It is true, we have many worse flowers, and successful ones, too, but the star is such a decided fault, that we cannot get over it. We cannot say but we should grow it for all that, for it is different from all others, and not worse than several that we now and then find among the winning pairs.

GARDEN REMEMBRANCER FOR JUNE.

ONIONS.—Thin those beds intended to stand for full bulbous, to three or four inches apart.

CARROTS and **PARSNIPS** intended for main crops, hoe out the former to about four or six inches, and the latter set to ten inches apart.

CELERY.—Plant out in trenches.

BROCCOLI.—Take advantage of wet weather to plant out a portion two feet and a half apart; sow a little more seed, and prick out those sown last month.

BET ROOT.—Thin to about from nine to twelve inches apart.

CABBAGES.—Sow seed for autumn Coleworts.

SAVOYS.—Plant out the main crop for autumn and winter two feet apart, if the weather be dry, give them a good supply of water.

RADISHES.—Sow once a fortnight.

SPINACH.—Sow a succession crop.

TURNIPS.—Sow the stone top twice during the month, and thin those sown before.

CUCUMBERS.—Sow in the natural ground for pickling.

ANNUALS.—Thin out where too thick. The last of the tender annuals turn out into the flower borders, and refresh once a day with water; those that remain to flower in pots must be repotted. Plant perennial and biennial plants.

RANUNCULUS and **ANEMONE**.—Tulips, &c. now past flowering, and their leaves decayed, should be taken up, cleaned, well dried, and put in a cool airy place.

CHRYSANTHEMUMS.—Plants in small pots should be repotted into larger.

GREENHOUSE and **STOVE ANNUALS** should be repotted for the summer's growth.

PANSIES.—New beds may be made by taking off rooted offsets, or by piping short cuttings.

HERBACEOUS PLANTS should regularly be trained or supported as they advance in growth.

Seed of hardy biennials should be sown.

Plant out the last of the Dahlias that are to flower and transplant seedlings, the former should be six feet apart every way; the latter in rows two feet apart in the row, and the rows three feet apart from each other.

Tie up Carnations and Picotees as they advance; let the tie be loose enough to move up with the plant, otherwise they get bound and the growth bends them. Only allow one stem to a plant, and as soon as the buds are large enough to handle take off all but three.

Shade Heartsease during the extreme heat of the day, and be liberal of water which should be soft.

Auriculas out of flower may have all the weather.

Polyanthuses out of flower may be turned out into beds again.

Water all newly planted flowers, and particularly seedlings.

Stick Pinks and other flowers that require it, disbud them to two buds.

Take up such bulbs as have dropped their leaves, dry them, and store them.

Turn Dahlias out of frames into places where they are intended to flower.

Wash Rose Trees and other flowers with tobacco tea, to destroy the aphides.

Cut down all flower stems as soon as out of flower, unless the seed be wanted.

Destroy the caterpillars in Roses.

Turn out Fuchsias, Geraniums, &c. into the open borders.

Carrots, for drawing young, second or fourth week.

Broccoli, purple cape, for autumnal supply, in the third week; Portsmouth, white and purple, for the following spring, in the first week.

Borecole, Brussels Sprouts, and any of the

Brassica tribe, for succession crops, during the month.

Cucumbers, either for picklers or for late supply, about the middle.

Onions, for drawing while young, or for bulbs, to plant in the spring, middle of the month.

Plant Potatoes, the winter main crops, throughout the month.

Plant Celery in nursery rows, or some of the strongest plants into the final trenches, for early autumnal use, in the fourth week.

Trees, which were budded last summer, must be frequently looked over; take off all shoots from the stocks; if any of the buds have failed, or been broken off by accident, let the stock grow again. Tie up the shoots of new budded trees to the part of the stock left above the bud, this will protect them against the wind.

Grafted trees should be examined; the clay may be taken off after a shower of rain, and the bass untied, at the end of the month.

Grape Vines must be assisted by stopping the shoots before the fruit: useless shoots must be cut off.

Apricot trees may be thinned; the fruit will make good tarts. All useless shoots ought to be taken from the trees; so also with Peach and Nectarine trees, and nip off curled leaves. Syringe trees with clean water in dry weather.

Cherry, Apple, Pear, and Plumb Trees, against espaliers or walls, should be divested of all useless and unhealthy shoots.

If you observe mildew, strew some sulphur on the affected parts.

MANURES AND THEIR APPLICATION.

It has been so much the fashion of late to recommend manures, natural and artificial, in great variety, that we must keep pace with our neighbours, and say something about them ourselves; yet until we have quoted a very able paper from *The Farmer's Calendar*, we shall not say much. We have been told—and the weaker-minded portion of amateurs have been told to their cost—that it is desirable to try experiments. We remember that in writing of the Auricula, we ventured to condemn experiments on several, but suggested that those who wished to try them should experimentalise on a very small portion of their stock; so we now suggest to them, who must be trying new manures, to try them on a very small piece of ground, and a very unimportant part of their crops; but *The Farmer's Calendar*, which contains a world of information, gives us the following on the subject of manures, and we commend it to our readers as the result of useful knowledge.

Bones may be termed the oldest of the new manures, and in every situation where the use of them can be adopted, no mode of expenditure will better repay the farmer. They have done

much good on grain crops and on grass lands: but the chief application is on arable lands for turnips, drilled and sown along with the seed by our improved drop drill machines, at the rate of 16 to 20 bushels an acre, the present price of half-inch bones being 2s. to 3s. 6d. per bushel. A most effective drop drill machine may be got from Hornsby, of Grantham, for twenty-five guineas, and may be adapted to sow carrots and turnips on flat ground in three rows, and beet and turnip seed on farm-yard dung. And it would be useless to enumerate the many instances of the great value of bones—they have converted whole tracts of barren heaths into fertile land, and have produced turnips, and fed the finest mutton, where nothing grew for the use of man or beast. On many farms the produce has been doubled by the use of bones.

All dry and warm soils are suited for the use of bones, a warmth and fineness of composition seeming to be the chief requisites, though success has been obtained where these essentials were not the principal properties of the soil. The colder loams and clays have been found more adverse to their development, but in these instances their action may be much assisted by mixing with other substances, and by heating the whole mixture with caustic lime. Bones are now most generally boiled before grinding, and the extraction of the fatty matter has not been found to be hurtful to their use, the principal ingredient being the earthy salt called the phosphate of lime, but with the real fertilising substance we are wholly unacquainted. Equally good crops have been obtained by using unboiled and boiled, mixed and unmixed, unheated and heated bones, arising, it may be presumed, from a particular state of the soil and atmosphere, which may be reasonably supposed to control the action of manures of any kind. It being now the practice of bone manufacturers to sell the crushed bone and dust separately, instead of mixed as formerly and most properly, the farmer is now recommended to mix the bones with ashes of any kind, fine earths of all sorts, sawpit dust, rape cake dust, road scrapings, and all similar substances that will pass the funnels of the drill machine, and to heat the mass a few days before sowing, with caustic lime slaked with urine, and then turn it over several times, and to sow them in a hot state. A heat is thus communicated, if it be wanting at the time in the soil or the atmosphere, caloric being the prime agent, both in animal and vegetable life, and the seed falling into the drop of bones, is immediately supplied with food, and pushed beyond the reach of its deadly enemies. Calcareous matter is also afforded, being another grand supporter of life. The writer of this article has this year a fine crop of turnips from sixteen bushels of bones, prepared as above, and from land in a very exhausted state, at a cost of 50s. an acre, after paying sixty miles of carriage.

The expense is moderate and profitable, and gives a crop where no other manure could be found. The soil is a cold moorish loam, on a tilly bottom resting on the greywacke formation.

In sowing bones, they must be covered by the soil; if the land be cloddy, cover them with a double mould board plough, and, in all cases of dry seasons and cloddy lands, roll immediately and heavily. Many crops are lost for want of this precaution. A greater variety of soils is fitted for bones than is generally supposed. Let not the farmer reject on that account, but prepare as above directed, and with proper attention, success will be certain.

Rape dust, or pounded cake, or the husk and refuse of that seed, is an artificial manure of considerable efficacy, both on culmiferous crops and for raising turnips. Oleaginous substances are composed chiefly of carbon and hydrogen, and require for their development moisture in the soil or in the weather. The cake may be got for £5 per ton, and may be crushed by a very simple machine; or the seed may be reduced, and the dust applied by machine, at the rate of six cwt. per acre.

Mixing with other substances must be recommended, as urine and soap-suds, and then dried for the drill.

Soot is a very powerful top-dressing for wheats, barleys, clovers, and grass-lands, in the spring, at the rate of forty to sixty bushels an acre; cost 6d. per bushel; and spread in moist weather, and on a moderately calm day. It has been very useful for wheat, carrots, and parsnips, mixed in six bushels of common salt and lime, and ploughed or harrowed into the ground.

Salt, common, sells at £2 10s. per ton, and is very useful when mixed with earths and lime, and considerably decomposed, and may be used after three months, at the rate of forty to sixty bushels an acre in broad-cast, and in drill in a smaller quantity. The use of salt unmixed is not much commended.

Nitrate of soda sells for 25s. per cwt., and is used at one cwt. per acre on grasses and young crops. The effects are considerable, but in many cases uncertain.

Saltpetre, or the nitrate of potass, sells about 30s. per cwt., which is spread on an acre of light land; but, like the former article, the effects are uncertain.

Woollen rags sell at about £5 per ton, and are usually chopped into small pieces and spread on arable land. They are much used by hop-growers, and 12 cwt. an acre, and sometimes much larger quantities, are applied. The effects are lasting. Rags would form an excellent vehicle when steeped in nightsoil and urine.

Gypsum, or sulphate of lime, sells about 3s. per bushel, in a raw powdered state, and is used at the rate of six bushels an acre. Some benefit has been derived from this salt on lucerne and

sainfoin, but the success has not been such as to recommend any dependence upon it.

Urate, of the London Manure Company, 40, New Bridge-street, London, is an artificial fertiliser of very considerable efficacy, in raising turnips after two years' trial. It sells at £5 per ton, which manures three acres, and may be drilled for all green crops, turnips, and tares.

Clarke's Desiccated Compost, or compressed night soil, for top-dressing wheat, sells at St. Pancras Wharf, King's Cross, London, for three and a half guineas per forty bushels, which dresses two acres. We suppose this manure is well fitted for the drill, though not advertised as such.

Poittevin's Patent Disinfected Manure, is a preparation of night soil, and is much commended for corn or green crops, at the rate of twenty to twenty-four bushels per acre, and sells at 13s. 6d. per quarter of eight bushels.

Poittevin's Highly Concentrated Manure is said to be similar to pure guano, and is recommended to be mixed with ashes, and used at the rate of ten to fourteen bushels an acre by drill or otherwise. It is sold at 9, Thomas-street, Whitechapel-road, London, for 30s. per quarter.

Bran has succeeded in raising turnips, and as a top dressing, applied in a dry and unmixed state. Probably it had better be mixed, and the decomposition begun before sowing. It sells about 6s. per cwt., and four cwt. will dress an acre.

Brewer's grains have been used as a top-dressing on grass lands with good effect. They might be fermented and dried for the drill, or spread in a fresh state on grasses or young barleys, afforded to the latter a manure of its own species in decay, which would agree with some modern scientific opinions on the course of nature as shown in the decomposition of stems and leaves.

Hunt's Artificial Manure, at High-street, Lambeth, sells for 1s. 8d. per bushel; may be used in drill or broadcast, at the rate of twenty to twenty-five bushels an acre on any kind of crops. It has done much good to hops.

Alexander's Chinese Manure, is sold at Newark Mill, Ripley, Surrey, for 21s. per cwt., and two cwt. are used an acre by drill or broadcast, on grain and grass lands.

Lance's Carbon and Humus sell for 12s. and 14s. per quarter respectively, and are applicable as the above preparation.

Street Dung, from Wapping and other riverside places, is carried as ballast along the coast to considerable distances. Animal excrements sell at 3s. per ton; scavenger's dung, of various kinds and qualities, from the streets, and privies, and ash-houses, sell at 10s. per two horse load. This dung is usually a cold dead mass, and may be admirably prepared for the drill by heating with caustic lime and other substances, as before observed in the case of bones.

Guano, or the dung of birds from South America, has been imported and used for top-dressing grain and grass crops, and for turnips, in many cases, with considerable success. It is much commended by scientific men; but it is probable that it has been much overrated in our variable climate. It may be mixed for drilling with dry ashes, and used at the rate of two or three cwt. per acre, which now sells at £20 per ton. It is best got from the London Manure Company.

Potter's Artificial Guano is similar to the foreign, but reckoned better for wheat and all corn crops; sells at Upper Fore-street, Vauxhall, London, at £15 per ton, and two cwt. is allowed to an acre.

In many cases some of the above manures will be beyond the reach of the farmer; but we are now to mention a fertiliser of known efficacy, and which can be procured in any situation. The manure we mean is "ashes," of any kind, from wood, vegetables, coals, turf, peat, earths, or, in short, the residue of any substances that pass through the action of fire. This process possesses an unknown quality of preparing bodies to afford nourishment to vegetables; it confers properties which they did not before possess, and banishes others that they never afterwards recover. How this is effected we may never know, but the fact being certain, it only remains to use it by the best known means. For this purpose, none is so well adapted as the drill, and ashes of every kind should be gathered with unsparing care, riddled, and mixed with urine or soapleys, and then heated and prepared for use with caustic lime. The scrapings of roads, and the paring or road-sides, and of banks of ditches, and rough boggy grounds, all present themselves for the purpose of burning, and the ashes may be used mixed or unmixed, as may suit convenience. Earthy peats and turfs, with rough foggage, would be well burnt with lime, shells, or in a kiln, together; as it may be expected that a more beneficial combination of the elements would happen from a conjoined combustion than from any subsequent mechanical mixture of the calcined ingredients. Here is a source of undoubted fertility, and which, with many others, would seem to preclude the necessity of going to South America for guano, while we possess such powers at home.

Of the use of lime itself we have said nothing in this place; the common modes of application are well known, and we have adverted to a new mode in the Calendar. It may be supposed to act in two ways, by operating as a caustic stimulant on other bodies, and in a cold state by entering as a mechanical ingredient into the staple of the soil; the former may be defeated by uncontrollable circumstances, and the latter may seldom happen, by reason of want of quantity. An opinion may be hazarded, that the mode above recommended of using it as a heat-

ing mixture for other bodies may prove a more beneficial way than either, for on the mixing and preparing of manures we are only beginning to learn, and of the processes and results of combinations we are almost wholly ignorant. The mechanical mixture we may improve much; the chemical combination may ever exceed our powers; the former everywhere shows the most valuable results when properly performed.

It is usually objected to the use of saline manures, and of artificial fertilisers in general, that they are transient in effect, and therefore not worthy the same attention as the more durable substances. When we grant this position, which is certainly established by our present experience, it does not in any way detract from the value of the artificial aids, because they are introduced to supply the universally felt and acknowledged want of the farm-yard dung; and when they succeed in raising a vegetable crop, especially of turnips, they raise the more durable vegetable "humus" in another form, and therefore answer the same purpose as if applied to the culmiferous crop itself. When the bones or ashes raise a crop of turnips, they raise a crop of straw for manure in the shape of the excrements of the cattle fed on them, and the value of the subsequent crops.

Thus we see that both animal food and corn are raised by these manures, and also the most durable fertiliser known. If these means be properly and fully used, no foreign importations need appear so terrific. In conclusion, we earnestly press this subject on the attention of the farmer, and stake all our experience on success when properly managed; the cultivator who neglects these abundant means, overlooks a certain source of gain to himself, and commits the unpardonable crime of denying employment and food to his fellow-creatures.

One word more on the necessity of the landowners introducing all such improvements, and showing to the farmers the utility and profit. Circumstances will very soon compel it, and it may be done at a tithe of the cost of useless expenditure, which redounds to neither general nor personal advantage.

On the subject of manures in general, we refer our readers to "Donaldson's Treatise on Manures and Grasses."

LIQUID MANURES.

This subject has engaged much attention lately from the great success that attends the use of liquid manures on the Continent. No litter is there used for the cattle, the culmiferous produce being mostly consumed as food, and the excrements and urine are in many places collected together in tanks, fermented, mixed with water, rape dust, and similar substances, and then spread over the young crops both before and after brairding. In other places, and in our country, the urine by itself, and the oozings

from the yards, are collected in a tank, and pumped into a water-cart, and then distributed over the land. No very great or durable results have attended the use of it in this way in our country, and it may be supposed that there is something very favourable for its developement, both in the soil and climate abroad, that produces such valuable results; our climate evidently requires more durable materials. It will be much more profitable to collect the ooziings from the whole farmery, by means of a covered drain, into a pit built round with stone and lime, into which may be thrown all road scrapings, mud, earthy substances, and vegetable matters of all sorts, to absorb the fluids, and when dry, in summer, to be used for turnip dung. If convenient, the pit may be covered, which would encourage a putrefactive process. The contents of the tank may be dried in summer, heated with caustic lime, and drilled in for turnips. This is a mode of increasing manure which is almost wholly neglected by farmers, though it is well known that common water will, by stagnation and putrefaction, and mixture with earthy substances, produce a good manure. This application is in the power of every farmer; the expense is moderate, and the effects certain.

WEEKLY JOURNAL OF GARDENING.

Cuttings of China Roses, Heaths, and other flowers, can now be easily struck.

Sow biennials for next year's flowering.

Mignonette in frames, and ten weeks' Stocks, forwarded in frames, must have all the air.

Destroy worms, slugs, and snails, whenever they appear, as after a shower.

Sweep and roll the garden walks once a week.

Plant out annuals when sufficiently advanced.

Hand-weed beds and borders.

Sow hardy annuals for succession.

Sow Carnation seeds in pots or boxes, in light rich soil, and cover lightly.

Replant violet beds with offsets, and sow seed.

Let Camellias be in the warmest part of the greenhouse, or the coolest part of the stove.

Sow Kidney-beans, the dwarfs, for a full crop.

Peas and Beans, for succession crops, as the earlier sowings appear above ground.

Turnip, the Dutch and Swedish, first and third week.

Vegetable marrow sow in heat.

Lettuce, the cos, for salad, at any time.

Scorzoner, Salsafy, Skirret.

Transplant Cabbages and Cauliflowers.

All kinds of new planted fruit trees should be frequently watered.

May 6, 1843.

ANDROMEDA FLORIBUNDA.

THIS splendid evergreen ornamental flowering shrub, which has been seen in such perfection at Loddige's, Lowe's, Henderson's, and Brown's Nurseries, in pots, has proved itself capable of standing the intense frosts of last winter unprotected, and its value is doubled by this simple fact. Its culture is the most simple, requiring nothing but peat and a little loam to insure success; the blossoms are as constant as its leaves, and unless mismanaged, there is no chance of disappointment. The plants, which have been sold as high as five and ten guineas, at Jenkins's Nursery, where it seems to have been introduced, may now be had at from a guinea and a half to three guineas, and it is one of the greatest beauties of a shrubbery. In the nursery where it was introduced it has grown like a weed; and the only reason it has not flourished equally well with one or two persons who have attempted to propagate it, is the soil it has been in; for it can hardly be supposed that the locality of Regent's Park has anything extraordinary about it so very favourable to vegetation, and therefore failure elsewhere must be attributed to other causes. The management at Jenkins's was as simple as possible: they were planted out in a common peat bed, where they flourished beyond measure, making a growth of from six to twelve inches in a season; single sprigs laid down in the ordinary way become in a year fine plants, well set with bloom. A curious blunder was made by the executor just previous to the sale at Regent's Park. Although the andromedas were mentioned in the catalogues, a buyers succeeded in persuading the man, who was totally ignorant of the value of the plants, to let him pick them at a very trumpery price, and we believe he got, at 10s. 6d. each, what had been repeatedly sold at two or three guineas. This got wind, and several other nurserymen claimed the same, each one, however, being worse off than his predecessor. When the sale came on, and the people saw how they were tricked, there was universal disgust; for instead of plants, the beds were made up with layers only, cut off at the time for the purpose of making the numbers up according to catalogue. Whether this circumstance lowered the value of the plant for the time we know not; but certain it is that the smallest plant, with a root and a bit of bloom upon it, will be worth half a guinea for years to come. As an ornamental plant it is far more beautiful than the Laurestinus, and holds its beauty quite as long, being scarcely three months in the year without its spikes of buds and blooms.

NIGHT AIR INJURIOUS.—A FALLACY.

Few circumstances are more calculated to prove the weakness of intellect in the community generally, than the facility with which it is imposed upon by the designing, or the assuming; and the eagerness with which it seeks safety in their *ipse dixit*. Strange, for example, that so obvious a fallacy as the above, namely, that "the night air is injurious," should be implicitly believed, and acted upon; when, by a little reflection and common observation, it could be entirely controverted; and the public, not only become emancipated from its fears, but a source of refreshing comfort, health, and invigorating enjoyment would be opened to them, of which they have not any conception.

No one can have walked in the streets of London during the midnight hours, and those of early morning, without being sensible of the great difference between the elastic nature, and comparatively pure sensation of the atmosphere at that time, and the oppressive, loaded, choking state of it, which is peculiar to the metropolis during the day time. All that is offensive, (of dirt, filth, disease, and disgusting smell,) is during the night, shut into every house; and the nocturnal perambulator, inhales the breath of heaven, as it comes laden, in the summer season, with the scent of wild flowers, and the fragrance of the distant hay-fields, a delight which we ourselves, have repeatedly experienced. In the jungles of the tropics, those swampy environs of our British grave, Sierra Leone, for example, when rains have saturated the heated earth, rank with vegetation in a state of decomposition; and the absence of the sun's rays during the night, causes a check to evaporation; when heavy dews steep the flimsy covering of out imprudent countrymen, with moisture, there is unquestionably, not only danger, but certain death, in nightly exposure; but on our well-drained soil, and open champaign country (particularly that in the neighbourhood of London), instead of danger, there is absolutely health and vigor floating in the glorious air, and wooing the timid citizens to its enjoyment. Yet, how rarely are the windows of their sleeping apartments open! Enclosed with all their daily filth (we speak particularly of those, whose trades necessarily infer disgusting auxiliaries), they breathe continually a contaminated atmosphere. Who can then wonder at the palid complexions, and stunted growth of the Londoners; or feel surprise that contagion with its insidious cruelty, wanders from house to house, insulating its almost self-made victims.

The very gypsies are a proof, not only of the innocence of the night air, but of its salubrity. So healthful a portion of the community is not to be found: yet they fix their residences in shady lanes, under trees, lying on the damp earth, and barely sheltered from the drenching mists of autumn, or the fierce winds and frosts of winter.

Throughout the year the windows of all sleeping apartments should be unclosed, suiting the space of the opening to the state of the weather; and merely using the precaution not to sleep in a draught.

So far is this free admission of air, from inducing a liability to take cold, it is well known to be one of the surest preventatives. We speak from the experience of many years, and earnestly advocate that which we practice.

AURICULAS.

THE following is a collection adapted for those who intend showing:

Bearless Superb.

Booth's Freedom.

Chapman's Britannia (better than Hedge's Ditto.)

Chapman's Sarah.

Dickson's Duke of Cambridge.

———— Duke of Sussex.

———— Earl of Errol.

———— Earl of Stanhope.

———— Prince Albert.

Fletcher's Ne plus Ultra.

Hedge's Britannia.

Hogg's Waterloo.

Howard's Lord Nelson.

Hudson's Apollo.

Leigh's Colonel Taylor.

Metcalf's Lancashire Hero.

Page's Champion.

Smith's Waterloo.

Stretch's Emperor Alexander.

Warris's Prince Blucher.

The above are all classed as green edges.

Dickson's Unique, very fine.

Fletcher's Mary Anne.

Grimes's Privateer.

Kenyon's Ringleader.

Oliver's Lovely Anne.

Smith's Bermondsey Beauty.

———— Britannia.

Sykes's Complete.

Waterhouse's Conqueror of Europe.

The foregoing are all classed as grey edges.

Popplewell's Conqueror, Taylor's Glory, Incomparable, and Favourite, are classed as white edges.

Bury's Lord Primate and Netherwood's Othello are both self-coloured.

The best few green edged flowers to depend on, if we have but few, are Booth's Freedom, Chapman's Sarah, Dickson's Prince Albert, Fletcher's Ne plus Ultra, Hudson's Apollo, Page's Champion.

The best few grey edged are, Dickson's Unique, Waterhouse's Conqueror of Europe, Sykes's Complete, Oliver's Lovely Anne, Smith's Bermondsey Beauty, and Fletcher's Mary Anne.

A FEW STAGE FLOWERS.

Buckley's Jolly Tar.
 Dickson's Duke of Wellington.
 ——— Goliah.
 ——— Prince of Wales.
 ——— Superb.
 ——— Violet.
 Franklin's Belloni.
 Gorton's Champion of England.
 Lady Anne Wilbraham.
 Laurie's Fieldmarshal.
 ——— Glory of Cheshunt.
 Page's Defiance.
 ——— Duchess of Oldenburg.
 Pearson's Badajos.
 Pollett's Highland Boy.
 ——— Ruler of England.
 ——— Standard of England.
 Schole's Major Cartwright
 Smith's Emperor Alexander.
 ——— Princess Charlotte.
 Warris's Union.
 Wood's Lord Lascelles.
 Yates's Lord Collingwood.
 The foregoing are all classed as green edges.
 Butterworth's Lady Wellington.
 Chapman's Brixton Hope.
 Dickson's Duchess of Wellington.
 Foden's Fair Rosamond.
 Gable's Duke of Wellington.
 Key's Lovely Anne.
 Moor's Violet.
 Page's Lord Hill.
 Schole's Generalissimo.
 Smith's Sir E. Knatchbull.
 The foregoing are classed as green edges.
 Hughes's Pillar of Beauty.
 Lee's Brighton Venus.
 Pott's Regulator.
 The foregoing are classed as white edges.
 Dickson's Apollo.
 Nelson's Funeral Car.
 Pope's Cardinal Fleury.
 Redman's Metropolitan.
 Schole's Ned Lud.
 Turk's Khyser.

White edged and selfs are so scarce that no selection can be made. All the show kinds must be had.

MAKING AND GETTING HAY.

As the season for haymaking approaches it may not be amiss to devote a few lines to the subject. The following facts connected with the making of hay were communicated chiefly for the *Gardeners' Gazette*, but, be this as it may, the concluding lesson will be found extremely useful to those who have small paddocks, and desire to make hay of their grass.

The proper *manufacture* of hay, if we may so term it, depends upon three processes—mow-

ing, making, and getting—and for each of these there is a time and duration so to be observed, that the herb at the time of being carried shall retain the greatest quantity of the elements of *fermentation* which the size of the stack will admit, without the risk of too much heating. Now, the English farmer understands all this so well, perhaps not scientifically, yet practically, by the eye and the touch, that, unless thwarted by the weather, his mode of management always to a certain extent achieves the point required, because directed to it with a full knowledge of its importance, though with a greater or less degree of ingenuity and judgment. The Irish farmer, on the contrary, exercises nothing worthy of the name of judgment from beginning to end. He is so greedy of grass, that he rarely mows until it has lost its best qualities for hay; in making it, he is deficient both in briskness and care; and in getting it at last to the stack he will take his leisure for a week or two, without thinking it of the slightest imaginable consequence.

The making of hay is indeed as much an art as malting or brewing, and it is not every one who can turn a quarter of barley or malt to the best account; though we are, of course, all of us prejudiced in favour of our own fancies and ways. If our individual opinion were demanded as to the tests of well-got hay, we should answer in the language of the midland counties, that it ought, when ten months old, "to be as green as grass, and smell like a violet;" and there is very little of such hay to be seen, either in our Whitechapel, or other London markets, or even in the yards of our great London cow-keepers. The old-fashioned taste for a strong-smelling hay prevails too much in Middlesex; and the mischief is done, not as might be supposed, in the stack, but in the field. Again, with respect to clover hay, a great mistake is made almost everywhere, by the error of supposing that it requires more exposure to the sun and air than other grasses, whereas, being less succulent, it requires less. We do not know better how to conclude this article, than by giving the experience of a gentleman, who is at once an excellent farmer and chemist, on the subject of getting clover. We believe he speaks of the red sort:—

"I follow," says he, "my mowers as they cut the grass, and spread it as thin as I can, and before night put it into cock. The next day, after the dew is off, I spread it again; in the afternoon I cock it again, and meddle no more with it until I carry it. The reason why I think that my hay is better than when made in the usual manner is this; I take it for granted that the more of the natural juices we can retain in it without *corrupting the stalk*, the richer and more nourishing it must be. Too often turning and spreading in the sun extracts too much of what clover has, in fact, too little. One

day's good exposure will take away such a quantity of the moist watery particles from this pipy grass, that the remainder is only sufficient to raise a proper fermentation in the cock, while the smallness of the body there keeps the fermentation from rising so high as to evolve too much heat. After twenty-four hours, the fermentation will gradually subside; and the pitching and stacking so checks it, that it will not again rise so high as to be detrimental. Cattle are fonder of hay thus made than when it is *done brown*, and less of it will support them."

PROGRESS OF FLORICULTURE.

THERE can assuredly be no enquiry more interesting than that which seeks the origin of our beautiful flowers and fruits, for, it would hardly be believed, were it not authenticated in our own days, that the magnificent Pansies of the present time were brought by culture from the weed called "*Love in Idleness*," nor can the uninformed imagine that our large and richly flavoured apples were the descendants of the common wild crab—that the gaudy Dahlias have within a very short time been produced from the single star-like flower which is now thrown away—and the splendid and odoriferous Carnations and Piccotees which now grace every flower show in their season of bloom, are the offspring of the single windmill-like flower which is banished by every person of taste. It is involved, perhaps, in some doubt what Rose was the origin of the present gorgeous varieties, but the wonderful sports of nature, as evinced in a bed of seedlings would induce us to believe it had no better parent than the dog Roses in our edges, or some other such insignificant species. To enquire into the means adopted to produce a noble flower from an ignoble origin is our present object, and by taxing our experience in one instance, we may by inference satisfy ourselves with regard to others. Let us take any flower that has not made much advance, but which appears capable of improvement, and set about altering its very nature. Let it be something very small, and let us determine upon merely increasing its size. We begin by sowing the best seed we can get, say of a *Convolvulus*, which is familiar to all. From all the seedlings that come into flower select the plants with the largest bloom, pull up and throw away all the rest; save the seed from this large variety only, and sow it again. You will not fail to find that while hundreds of the seedlings are worse than the present, some will be as good, and, it may be, some one or more better. Repeat this perseveringly from year to year, throwing away the worst, and saving each time from the best. A few years will assuredly alter the race to a much larger one, and this may be continued until we are satisfied. Now, whether the

object be size, or colour, or form, the process the same: select that which is the nearest approach to your wants, destroy the rest as soon as you can see what they are, save seed from the favourites only, and, inasmuch as there will always be a difference each year, work upon those better than the parent, and always sacrifice all that are worse. The most obstinate plant or flower will yield in time to cultivation, and change, so far as its nature can by possibility admit of it to change. We pass by carelessly all those plants and flowers which are familiar to us. We ever consider what might be accomplished by care, and we are only awakened to the importance of the subject when some new addition comes upon us as a wonder. Whilst the *Dahlia* was single it was grown as an autumnal flower, hundreds of persons never even thought of sowing seed. The first double ones that were imported opened our eyes, and we could then follow the example. If the original raiser of double Dahlias could be asked the question, we have no doubt we should find that he first saved seed from flowers which had more than the usual number of petals, that he then continued to save seed from those which had the most, until he found them semi-double, and lastly double. We have already laid down the rules by which flowers should be judged, and given patterns, as it were, of what would be considered perfection. This may be carried through any flower that blooms; but, in the mean time, there are plenty to try experiments upon, and in selecting plants to save seed from, all you have to do is, to choose those which approach the nearest to our models. We verily believe, that if the object had been to make the *Heartsease* square instead of round, that a great deal might have been done towards accomplishing the desideratum. Our readers will find that in saving the seed of common annuals it is better to mark the very best only, and even without taking so much pains as to throw away the rest, there will nevertheless be a manifest improvement.

CULTIVATION OF THE CAPER-PLANT.

THE Caper-plant grows naturally in many parts of the south of France, and a little care causes it to flourish perfectly well in the northern provinces. In autumn a single digging about the plants is all that they require. In October, in order to afford them shelter, the stems are cut down to within six inches of the ground, and the plants are covered over with the earth of the intermediate spaces. This is all the protection they demand during the winter. In spring-time they are again uncovered and trimmed. The old shoots are then covered up to the part where the plant appears to push forth its fresh part, and soon new shoots are seen. They soon get into flower at the commencement of summer, and continue to bear flowers as long as the fresh-

ness of the nights does not restrain the sap. Every morning the buds are gathered, because the largeness of the capers take away from their value. When once they have advanced beyond a moderate size, they are only good for cutting up, having become too hard to be left entire: No matter what precaution may be taken in the gathering, there will always be flowers which escape notice and burst forth. They must then be allowed to go to seed, and when the capsules, still green, and large as an olive, are advanced enough, they are gathered and preserved. They form what is called the cornichon caper. The daily gatherings are thrown into tons of vinegar; salt is added in order to prevent the watery portion of the bud from weakening the vinegar, and different gatherings at last pass into the hands of the commercial pickle-men.

The extreme simplicity of the cultivation necessary for this plant, ought to place it in every garden. When planted near a wall exposed to the south, it will be found to succeed perfectly in this country. In winter it would be wise to cover the plants with matting or straw. Abroad, in large plantations, it is customary to place the plants in the shape of a five of hearts, and at some distance from each other. They multiply very rapidly, and the stems springing from the root, soon become numerous. Hence, it is easy to procure slips from the parent root. These plantations are sure to flourish, as the plant requires but little dryness and heat.

It is not against the law to introduce a fact which is unquestionably connected with the present subject, though it may not add much to the stock of knowledge as to its culture.

On the island of Malta the caper tree grows wild in great plenty, and is particularly abundant on the walls of Lavallette, which, since the capture of the island, has been the undisputed perquisite of the officer in command of the engineers. Some time ago the officer commanding that corps complained to the governor; stating that the trees were cut down, and the fruit carried away by the inhabitants, and begging the governor to issue an order for the protection of what he conceived to be his lawful property; upon which the old facetious gentleman gave out the following ludicrous order:—"Whereas it has been reported to me, by the officer commanding the engineers, that the inhabitants of Lavallette have for some time past destroyed the fruit, and cut down the caper-trees hanging on the outside of the garrison:—It is the command of the governor, that no one in future *cut capers*, either on the top or sides of the walls, except the lieutenant-colonel commanding the engineers. Any one found *cutting his capers* on the walls, after this notification, will be confined to the black-hole for the first offence; and, for a repetition of so flagitious an act, the next *capers they cut* will be *their own*, at the tail of a calash, to the tune of a cat-o'-nine-tails."

SUMMARY OF SOME OF THE PROPERTIES OF FLOWERS.

THE advancement of floriculture has always been an object of the first importance with us. We have taken more pains with it than with any other branch of horticulture or gardening, because it would be followed with advantage by a larger class, and by persons in all grades of society. The *Horticultural Journal* paid great attention to the properties of flowers, with a view of teaching the amateur what is necessary to render him a successful exhibitor, and confirming the more experienced, but perhaps wavering professional gardener in some fixed principles. It is desirable that all persons should be united upon the value of fancy flowers, and, of course, upon the standard of perfection by which such value shall be estimated. The Metropolitan Society has done more towards fixing this standard than all the Horticultural and Floral Societies put together. The rules laid down by that society have been followed, or professed to be followed, by almost every establishment, deserving the name of Floral or Horticultural, in the kingdom, and it has been of great service to the science. The properties of flowers were, at one time, valued by no set rules of propriety, by no consistent attribute of beauty. The whims and fancies of particular individuals pronounced particular parts estimable, without considering whether such points increased the splendour of a flower; whereas the points insisted upon by the Metropolitan Society, without a single exception, increased the beauty of a flower even to ordinary eyes. Thus it was that roundness and flatness in the bloom of a pansy were said to be the standard of perfection; place side by side a pansy of the old shape, and one nearly approaching the circle, unbroken through the petals, overlapping each other and tolerably flat, the most unpractised eye will see the richness of one compared with the other; and though there are none quite round or quite flat, there are many which approach both, and they are the more valuable in proportion to their near approach. Again, the properties of the dahlia are equally well defined, the nearer the shape approaches two-thirds of a ball the better. Everybody can understand this definition of the property of a dahlia. It is true, that to become this form, the petals must be broad, round ended, short, and imbricate well, free from notch, plenty of them, and the centre not over bloomed; but these are details. If the flower be two-thirds of a ball, the detail is sure to be good, for if the petals be narrow or pointed, or long, the flower cannot be well formed. A tulip has been equally as well defined as to property, and very fortunately, for the flowers which were bearing high prizes were perverting the taste of the growers, and it will take some years to correct it. Nevertheless, the rule laid down by the Metropolitan

Society cannot be mistaken. The desired form, when expanded, is from one-third to one-half of a hollow ball, forming, as a matter of course, a perfectly round shallow cup; for, as the beauty of a tulip is in the inside, no other form will so well display it. The tulip must, however, possess one quality without which it will be now set down as valueless. The white or the yellow must be of one uniform shade or tint, without stain, to the very centre. In this case, as in the other, the most ordinary observer, who may know nothing about tulips, shall, nevertheless, in a moment decide that the clear round flower is more beautiful than one that is stained or not round. Upon this principle should the value of all such productions be estimated. We do not mean that every body should be able to appreciate all the points of a good flower; but that the leading ones, especially the form, should be that most likely to please the world. The auricle is a flower equally requiring a proper estimation of properties, and equally indebted to the Metropolitan Society for published rules by which to regulate them. The chief point here again is *form*. To be quite round and quite flat, like a counter, would be perfection; but here the colours form a much more important feature than in other flowers, for the auricle will come all green like a calyx, or all white and mealy, without any distinct colour. It has been, therefore, necessary to state that there should be several divisions of colour; the small tube in the centre should be bright yellow—the circle round this perfectly white—the next circle should be a distinct colour, lilac, violet, purple, blue, brown, or dark approaching to black, and very unbroken—and the outer circle of all green, grey, or white; and in proportion as all these form distinct circles, and the individual pips are flat, &c., does the value of the flower increase. There is another property estimated in London and its vicinity more than in the country. The Metropolitan Society consider it a leading property that the auricle should form a bold truss of seven pips or flowers at the least; in the country they do not require more than five. Thus many flowers will do for the country that would not do in the metropolis.

In roses, novelty seems to have been the leading point, and many growers have discovered novelty where nobody else could; but there are properties as essential to a good rose as to any other flower, novelty forming one of them. A rose should be strongly perfumed—the petals should be thick, round, and plentiful; the colour bright, and the flower double; the more of these properties possessed by a rose, the better it is. Hundreds, however, are in cultivation so nearly resembling each other, so nearly approaching to single, so weak in their perfume, and so straggling in their growth, as to make every amateur who has purchased largely repent truly that he has been governed by fine names, instead of fine

qualities. Geraniums have come in for their share of attention as to properties. The majority of them have petals so narrow, that, as there are but five, they divide and form an irregular star; they ought, like the heartsease, to be wide enough to lap over each other, and form a whole and nearly circular flower, rather campanulated than otherwise. These ought to come in trusses, comprising at least six or eight blooms each, and forming good close heads. Bright colours, novel pencilling, and deep dark spots on the upper petals, are in great esteem.

The principal object we have in view here is to show that, in the estimate of properties by the Metropolitan Society of Florists, regard is had to those points which please every body; that in fact, taken in a general way, an ordinary flower placed by the side of a flower approaching the standard of perfection laid down, shall appear inferior to ordinary observers—that the properties estimated as valuable to the connoisseur shall enlist among its admirers all persons of taste, whether florists or not; and when we resume this subject to go into details, we shall be able also to show that there is a good reason, to be made apparent to common observers, for every point esteemed by the society as essential to a good flower. In tulip growers we have observed more whimsical notions than among any other class of florists. But such is the advantage of setting even the experienced cultivator upon a right course, with regard to the properties of flowers, that there are sorts which bore a great price now hardly cared for, and others which bore no price at all gradually becoming favourites. The uncertainty of the bloom will always render the possession of a bed of flowers a source of anxious pleasure, because there are varieties usually stained at the bottom, and therefore worthless, but which sometimes come very clean and fine, and they are then grand beyond description. Nine times out of ten a *Siam* will beat a *Louis XVI.*, but the tenth time the *Louis* may come without its usual stain at the bottom, and then it is a sight worth travelling miles for. *Pompe funebre*—rather a *high-priced* Tulip—is certainly a worse flower than Polyphemus, in every stage, from blight to perfection, and as a single flower in competition it will not create a moment's doubt. The Metropolitan Society's rules would enable a man who never saw flowers to judge which was the best, and there is no small difficulty, when old cultivators are selected for judges, to keep them from giving the prizes to dear flowers instead of good properties.

But some of our northern brethren are very fond of throwing down the apple of discord, affecting to be more particular than we are, they rather obstinately contend for distinction, without difference. We have set a form, and because their flowers do not come up to it they object to it. We have insisted that a Tulip shall be clean,

and, although we do not throw out a flower for being of a wrong form, we absolutely throw it out if it has a stain, even if it have all the other properties, and as the most successful of the northern flowers have foul insides, they will not subscribe to the justice of this our *sine qua non*. We confess ourselves indifferent to the feeble struggles now making by a few very obstinate men, who cannot bear the idea of throwing out the sorts with stained insides. It is a silly struggle against a dictum which must prevail, and which even now prevails, among the people of taste. Well, then, our advice to the northern growers is, that they at once subscribe to our doctrine, that a stained bottom shall not win a prize, if ever so good in other respects, and that the nearer the form comes to our model the better a Tulip is. Come we now to Carnations and Piccotees—and here they still differ from us. We want the highest crown, they do not; but how long will the few who now hold out be able to resist the force of that opinion which is founded on the real beauty of the flower? Place one by the side of the other, and we would abide by the taste of the whole country. We have not done with this subject yet.

ON BUDDING.

BUDS to succeed well, ought perhaps to be always inserted in the cool of the evening of damp or hazy days, because evaporation in the first instance, and during two or three of the early days, is the chief fatal agent: secondly, therefore, they should be quickly inserted, and made to press closely and entirely upon the alburnum or sap wood of the stock: thirdly, they should face away from the mid-day sun, and be shaded, if possible or convenient, by a green leaf tied by its foot-stalk, and thus suspended in front of them; or by a small body of threshed moss, moistened and secured; but this is apt to induce too much damp, and may harbour insects. Fourthly the leaf of the bud is of no use; it is the organ of transpiration, and, in the case of roses particularly, ought to be closely cut off, leaving only a portion of its stalk.

Having selected his stocks, the operator is to be provided with a twig of young green wood, furnished with plump eyes, a sharp budding-knife, with its ivory-flattened haft, and some strings of new bass, from eighteen inches to two feet long. These shreds should be tough, yet soft, half an inch broad, and strong enough to bear a good twitch; for it is extremely tantalizing, and not without danger that a binder fails and snaps short off, just at the critical moment of tying, as sometimes the stock is broken by the force of the jerk thus caused. These strips of bass should be placed in a vessel containing water, and taken out wet one by one

as required. If the stocks be low—and such are the young plum-trees for peaches—the quinces and pear-stocks for pears, &c. the bud should stand on the south or south-west side of the stock, and bending it towards him, lean over it whilst he cuts the bark on the north side, and performs all the other operations. If it be a standard, as in the case of a tall wild rose-stock, he must stand in front of it, as also if the tree be growing close to a fence or wall; but, if a choice of position can be commanded, there will be more freedom in operating by leaning over the work.

All being ready, let the bud be selected, and cut off by an upward cut from half to one inch below to half an inch above it, bringing off so much of the wood as will secure the internal eye and pith of the bud. Insinuate the point of the knife under the scale of wood at its lower end, and gradually coax or draw it off upwards. If the eye of the bud remain, and project inwards a little, the work has been duly performed; but if a cavity be seen, the eye has parted and gone away with the woody fibre, and the bud, being thus deprived of its pith and alburnum, is imperfect. Roses do not require this detaching of the wood, nor perhaps does any very juicy bud or shield; but no dry fibrous wood can ever be admitted. The bud being ready, and held between the lips, let the incisions be made in a free, smooth part of the scion, and the bark opened boldly and widely at each edge. With the haft held in the left hand, keep the cleft fully open, and with the right hand lay the shield with its bud truly on, and in complete contact with the wood, but with its extreme top a hint above the edge of the cross top-cut of the stock; then, with the fingers press the edges of the bark correctly over the inserted shield, and cut off its top exactly at the cross-cut. Thus a fresh juicy surface of the bark will meet the under edge of the bark of the stock. Pressing the wounded parts gently, pass a ligature once round below the incision, wrap it over itself, confine the one end, and coil the remainder; plat, and firmly, over the wound, avoiding the bud, then over the cross-cut, and above, and secure it with two or three simple hitches.

FURZE AS FODDER.

WE have frequently heard of the nutritious properties of the young tops of furze, when bruised, and given as fodder: it is also a fact familiarly known to cottagers and others, who possess right of common, that the sheep and lambs greedily devour the first spring shoots of this shrub; and that in consequence of the prickles of the old leaves, the noses and lips of the lambs become very sore, and even diseased, with eruptive blotches, owing to the points, which break off, and remain in the tender flesh.

A practical farmer has stated, that he had fed his cows a long time, during the winter months, with bruised furze, from a common. The land, he observes, pays him a good rent at a farthing a bushel, and the cost of bruising is one penny; but if *that variety which is not prickly* were used, it would not require bruising, and consequently save the penny per bushel alluded to.

Now we ask our botanical friends whether there is—*bona fide*—any variety of furze which is unarmed? We have sought among our authorities, and trace no other than the following:—

1. *Ulex Europæus*, common European furze, Britain.
2. — *nana*, dwarf furze, on dry heaths, do.
3. — *Hibernica*, Irish furze, do. Ireland.
4. — *provinciale*, Provence furze, South of Europe, 1828.

The term *Ulex* may be of doubtful derivation, but it is said to have its origin in the Celtic word *Ac*, a point, the leaves terminating in prickly points. The double flowering garden variety, is prickly also. The plant has been removed from the 17th class *Diadelphia*, to the 16th *Monadelphia*, because the stamens are collected into one bundle.

Furze suffers much in very severe weather; and the winter of 1837-8 has given proof of this, we were compelled to witness in the extensive common near us, wherein about 2000 acres of the shrub became a most unpleasant object; every leaf being deprived of verdure. We possess the "common" and "dwarf" species—the latter clearly distinguished by its expanded calyx leaves, (sepals), and both are alike destroyed.

There is no reason whatever to believe that any variety without prickles has yet been seen. So far, then, there appears little reason to hope that the expense of bruising can be obviated; but as refers to *sheep*, which really eat furze with avidity, under certain circumstances, it surely could not be very difficult to introduce some hard wood, or even stone, into the machinery of a mill—or both—so as to throw aside iron entirely. The French furze—gorse, or whin—appears to be the *Ulex Provincialis*, introduced here in the year 1823, according to Loudon's *Hortus Britannicus*. It is, it should seem, a native of *Provence*, and of some parts also of the south of Europe.

Mr. Spooner's communication bears date 1836, hence, we conclude the French furze shared the fate of its English congeners. The rigour of the frost in the January, 1838, left not one bush unscathed; and almost the whole of the verdure has disappeared. If the foreign species had escaped, it had been considered doubly valuable. Not to dwell longer on this point, the farmer's attention is directed to the following

facts, which rest on the authority of a gentleman who has devoted much time to rural affairs; we allude to Dr. Anderson, who cultivated furze for the express purpose of feeding cattle and horses. He sowed from 15 to 20lb. of seed per acre, in a field of good dry loam, along with a crop of barley. "But for *sheep*, who take to this food very kindly when they have once been accustomed to it, less nicety is required; for if the seed be simply sown broad-cast, very thin (about a pound of seed per acre), upon the poorest soils, after they come up, the sheep of themselves will crop the plants, and soon bring them into round close bushes, as this animal nibbles off the prickles, one by one, very quickly, so as not be hurt by them: sheep, however, that have not been used to this mode of browsing, do not know how to proceed, and often will not taste them. But a few that have been used to the food will soon teach all the rest how to use it." —*Communicated by Mr. Towers.*

REMARKABLE TASTE OF THE CHINESE IN THE CONSTRUCTION OF ORNAMENTAL GROUNDS.

FROM the unnatural, though fanciful, designs which the Chinese impress upon their earthenware, it has been generally inferred that they have no correct notions of perspective, or taste for the picturesque. No conclusion, however, can be more erroneous. In the laying out of their ornamental grounds, they adopt a gigantic scale of operations, and exercise a degree and a variety of art, to which Europeans, and even more westerly Asiatics, are strangers. These grounds are of immense extent, and in the disposition of them the aim of the artist is to inspire the explorer with successive sensations of delight, melancholy, terror, superstition, and awe. On entering one of these enclosures, for instance, a labyrinth of Elysian shrubberies will lead him to a gloomy forest of cedars and pines; after wandering through the dusk of this sombre and silent retreat, he will suddenly find himself on the edge of precipices, in the broad glare of daylight, with cataracts falling from the mountains around, and torrents raging in the depths beneath; or at the foot of impending rocks; or on the banks of a dull-moving river, studded with sepulchral monuments under the shade of willows, cypresses, and other plants sacred to sorrow. His way will now wend through passages, illumined only by the unearthly lights which the Chinese are so skilful in preparing, and lined with colossal figures of dragons and other monsters bearing in their talons cabalistical scrawls upon brass; and then, perhaps an abrupt turn will bring him into subterranean apartments, where fragrant and effulgent lamps discover the effigies of kings and heroes lying in state with tablets of moral sentiments in their hands, while a sad and solemn melody creeps

through the air from unseen instruments moved by inaudible water-works. Emerging from thence all the luxuriousness of the Indian Archipelago strikes his eye, with its innumerable monkeys and parrots, clambering and chattering upon every branch; when once more the spectacle suddenly changes, and the spectator has before him all the desolation of a tropical tempest—trees forced out of their natural direction and seemingly torn to pieces by the violence of the hurricane; houses unroofed; huts scattered; fields inundated; and every vestige of animated nature effaced. In these fantastic and animated scenes optical delusions are very freely and skilfully used; such as paintings on prepared surfaces, contrived to vary the representation, as often as the spectator changes his position: exhibiting in one view groups of men, in another a combat of wild beasts, on a third cascades and rocks, &c., &c. They also frequently introduce pieces of architecture, and even whole *prospects* in *perspective*, which latter they manage by introducing temples, bridges, colonnades, and other fixed objects, lessened as they are more distant from the points of view, by giving greyish hues to the pieces in the back ground, and by planting there trees of a fainter colour, and smaller growth than those in the foreground.

It may at first sight appear strange that a nation which has made, during ages of civilization, so little progress in science, should be capable of such works as we have described. On reflection, however, the facts are not only reconcilable but natural. The Chinese are an ingenious people, but the complexity of their written language is an insuperable obstacle to their becoming a learned one; and the genius of the country has therefore directed itself to objects which amuse the senses, because debarred from those which find exercise for the intellect.

VEGETABLE INDICATIONS OF THE NATURE OF SOILS.

In discovering the nature of waste soils, much assistance may be derived from observation of the plants which they spontaneously produce. Chemical analysis of the soil is certainly the most scientific method of ascertaining its nature; but there are few farmers who are capable of performing such a delicate operation; nor, indeed, is the result of the operation always satisfactory, as soils vary greatly at short distances from each other. But the indications afforded by plants are easily understood, and may generally be relied upon. The degree of vigour with which the plants grow will also, in some degree, afford a measure of the productive powers of the land which produces them.

“The early or late growth of weeds and indigenous hedge-row plants in the spring, on any particular soil, compared with the spring foliage or flowering of the same plants, indigenous in

other situations, will,” says Mr. Farey, “be found a pretty sure index to the earlier or later period, at which useful vegetables would come to perfection when cultivated thereon; and these will be found to depend in a very considerable degree on the situation of the soil for receiving, or its capacity for retaining a superabundance of wet during the summer months.”

The fertility of soils depends—1st, in their being in some of the proper degrees of medium between obstinate cohesion and excessive porousness—that is, being composed of a fit commixture of the primitive earths and other accompaniments to a sufficient depth; 2ndly, in containing a sufficient quantity of vegetable food; 3rdly, in being free from substances hostile to vegetation. All soils, in proportion as they approach to or deviate from this standard of perfect fertility, are distinguished by the appearance of mosses upon them when they are left in grass. On the very best and richest soils the mosses do not appear, even in the depth of winter, a constant verdure prevailing when the temperature is not exceedingly severe. But in soils which fall somewhat short of this perfect character, the mosses, in the course of a few years, appear among the esculent herbage as soon as the approach of winter suspends the vegetation of the latter. Three species of moss are most prevalent. *Hypnum cuspidatum* prevails chiefly on soils somewhat cohesive by a considerable admixture of clay; *Hypnum squamosum* and *Hypnum perenne*, indicate friable soils where sand abounds. On well-drained ground the mosses are of a shining yellowish green colour; where moisture prevails they are of deep dark green. When a soil is a little removed from absolute sterility, these mosses are found scattered upon it, and prevail the more the further it is removed; so that they are most abundant on soils which are in the middle between absolute barrenness and perfect fertility.

On absolutely barren soils, however, none of those mosses appear; the surface of such soils is covered with a white leathery lichen. But, in time, where water remains long on the surface, one species of *Bryum* rises in cushions, and spreads gradually round, and is then often accompanied by two other species of *Bryum*, and sometimes where much water is detained, by *Sphagnum palustre* (bog-moss.) Other mosses succeed. On barren ground, in this state, *Lycopodium* (club moss) is also frequently found.

It may not be amiss to mention here, that the different species of lichens upon stones indicate their firm texture; the bryums and jungermanias generally the contrary. The absence of all moss on stones exposed to the weather shows that they are oxydable, that their surface crumbles off in the winter season, and, consequently, that they are unfit to be used in buildings. On the other hand, their mouldering away gradually adds to the soil.

It has been laid down as a rule, that the dock, the thistle, the rush, and the nettle, show different descriptions of soils in a pretty exact manner; the first affording the mark of an inferior soil of sour stiff kind; the second, that of a good one, of the corn sort; the third, that of the wet, cold, clayey kind; and the last, that of the dry, loamy description. With respect to the second class, the thistles, it does not afford a sure indication, as thistles have been found growing in soils which would scarce produce any thing else, and growing as luxuriantly as on fertile ground.

Keut, in his Hints on landed property, states that the *plantago lanceolata* (ribwort plantain) indicates a deep, free, or sandy loam. It has, however, been seen growing profusely in a pretty strong clayey soil. *Plantago major* (greater plantain) marks a firm good loam. *Plantago coronopus* and *P. maritima* (buckshorn and sea plantain) gravely and poor soils. The *tussilago petasites* (butter bur) near the margin of rivers, is a sure proof that they overflow their banks. The presence of the *asphodelus palustris* (marsh kingspear) is generally an indication that the *drosera* (sun-dew) is near, which brings on a terrible disease in cattle, and often turns their milk into blood on mossy soils. The water-lily in pools, among moss and peat, commonly points out marl or rich clay. Darwin regards the *digitalis* (foxglove), and *arenaria* (sandwort), as a mark of sandy soils; but foxglove in reality prefers loam, and has been found growing vigorously on a pretty cohesive brick-coloured earth. *Veronica* (speedwell) has also been said to belong to moist situations, but it shows a marked preference for dry friable soils.

Among the plants which afford pretty distinct indications of the quality of the soil are the following:—The *clematis vitalba* (traveller's joy or wild climber) certainly shows a calcareous soil, and often points out the existence of chalk, of limestone, or of a valuable marl, where such might otherwise have escaped detection in the subsoil. *Juncus conglomeratus* (the common rush), *carex panicea* (blue stargrass), *trifolium alpestre* (mountain trefoil), and *rumex acuta* (common dock), are signs of a soil too cohesive, and holding water too strongly. The first particularly shows a soil capable of considerable fertility with accurate draining and good culture. *Juncus articulatus* (the spret) indicates a spongy soil, through which water is continually oozing. *Equisetum arvense* (horsetail) indicates a weeping subsoil. *Achillea ptarmica* (sneezewort or goose tongue), and *tussilago farfara* (coltsfoot), point out a thin ill-cultivated soil upon an impermeable bottom: for though this last plant is often found on the banks of rivers and brooks, where the streams have deposited its winged seeds, those poor thin upland soils are its native land. *Ononis arvensis* (restharrow) thrives only on dry sandy soils. The prevalence of *senecio*

jacobæa (ragweed) indicates good dry friable soil. *Chrysanthemum leucanthemum* (white cornflower), *euphrasia odontites* (red-flowering eyebright), and *gentiana* (lesser centaury), prevail on soils pretty cohesive, and not of the richest quality. *Chrysanthemum segetum* (corn marigold), *papaver rhæas* (red poppy), and *rhinanthus cristagalli* (yellow rattle), are found chiefly on soils that are open and dry, and frequently faulty on that side. Where *trifolium repens* (white clover) and *bellis perennis* (the wild daisy) much abound, they indicate a well-constructed fertile soil, and capable of the greatest improvement: both, however, are rather partial to soils somewhat cohesive, and well stored with calcareous earth.

Of trees and shrubs, the oak distinguishes deep, strong, loamy soils; the common ash, those which are more dry and open, or porous; the hazel, as a hedge plant, seems to delight in a dry, rich, loamy sort of land; while the white-thorn succeeds to most advantage on those loams which are dry, but somewhat stronger in their qualities. Of shrubs, the broom prefers soils which are friable and dry; the furze, such as are more cohesive and retentive of water; and the vigour with which they grow, in their respective situations, evinces the degrees of fertility of the soil. Abundance of fern is indicative of good land. [This paper is abridged from the excellent little work called the Farmer's Calendar for 1843, which abounds in excellent papers.]

FOREIGN SEEDS.

"SIR,—I have received a parcel of seeds (of which the enclosed is a sample) from the East India Company's Botanic Garden at Calcutta, and am desirous of ascertaining whether they are seeds of *Flowers* or *Shrubs*. I should also wish to know how they must be raised (if in heat), and what general treatment the plants when raised require. By your favouring me with an early notice, you will much oblige,

"Hortus."

The manner in which names are too frequently written on packets of seeds, almost defy any one to decipher them; and if it were for no other reason than this very example affords, we should rejoice at the completion of a Dictionary like that which we are preparing, under the title of the "Amateur Gardener's Companion." Of the twelve packets enclosed in the above letter, the following will explain eleven, the other was illegible. We are induced to insert them in the work, because other persons may be receiving some of the same kinds from the same quarter.

FLACOURTIA, *inermis*:

Stove evergreen tree; East Indies. From 4 to 20 feet high, ornamental white flower,

propagated by cuttings in sand under a glass.

HEDEYSARUM, *humosum* :

Hardy herbaceous perennial; flower purple, adapted for flower borders; loam or peat.

DESMODIUM :

Stove evergreen (probably); purple flower in July; mixture of sandy loam and peat; young plants raised from cuttings, in sand, under a glass in heat, or by seeds.

CROTALARIA, *linifolia* :

Stove evergreen shrub; yellow flower in June; mixture of loam and peat.

BOMBOX :

Stove evergreen tree; South America. White or scarlet flower, time uncertain. Sandy loam; propagated from half-ripened cuttings taken off at a joint, and planted in sand under a glass, in a moist heat.

SIDA :

Generally stove plants; free flowering, of small beauty; thrive in any wet soil. Some shrubby kinds; may be increased by cuttings, under a glass.

CASSIA :

Ornamental plant, from South America, varies from 1 to 15 feet in height, flower yellow. Generally stove; light loamy soil, or loam and peat.

ATRAGENE :

Species of Clematis; hardy deciduous climber, common soil; young plants may be obtained from cuttings, struck under a glass, or layers.

HYMENODICTUM, *thrisiflorum* :

Stove evergreen tree, from the West Indies, from 20 to 30 feet; loam and peat; propagated by cuttings, which, if taken off when ripe and planted in a pot of sand, under a glass in heat, will strike.

URARIA :

Stove evergreen shrub; purple flower in July; loam, peat, and sand; increase by cuttings in sand, under a glass in heat.

OLEA, *robusta* :

Olive genus. Stove evergreen tree; fragrant flower, white in June; grow well in loam or peat; ripened cuttings root readily in sand under a glass.



THE PERFECTION OF A CUCUMBER.

It must be nine of its diameter long, or (which is the same thing) three of its circumference.

It must be round and straight as a ruler, and as even all the way, except that half a diameter is allowed for the neck, and half a diameter for the rounding off of the nose.

It should be smooth on the rind, and free from ribs or shrivels.

It should be of a dark green colour.

The spines should be black and numerous, and be equally distributed over the whole fruit.

The bloom on the fruit should be as perfect as that on a fresh gathered bunch of grapes.

The remains of the flower should be attached to the nose of the fruit, and the fresher it looks the better.

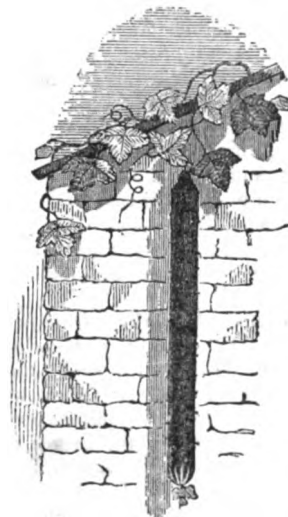
All stale fruit, and fruit under nine inches long, are disqualified from showing.

A brace of fruit, or a leash of fruit, must be of equal lengths.

White spined Cucumbers form a different class if shown at all, but the very best of them look as if they had the mildew at every spine, and are no more fit for prize fruit against the black spined varieties, than a white-edged auricular is to show in a green-edged class.

The Ipswich Society make length one of the great points. We deny altogether the correctness of this property; the length ought to be according to the size, and nine times as long

as it is across is the most beautiful and symmetrical that can be found. The following cut exhibits a plan of growing from the rafters of a house, and the fruit being twelve clear diameters long instead of nine, looks as much like a mould candle as a Cucumber. Even ten diameters long is not so handsome as nine.



HINTS TO YOUNG TULIP GROWERS.

SUPPOSE you are about to grow tulips, be not ambitious to commence with a great variety. There are some standard flowers of excellent properties which you can hardly have too many of, and such may be had reasonable. It has been the practice of all growers to weed their beds, as they call it, of common flowers to make way for dear ones, but we all know that scarce and expensive ones are not always the best; it must be remembered too, that show flowers are not always the most brilliant nor the best adapted for a bed, we there want variety and must not expect all to be fit for a stand, yet no flower ought to be admitted that is not naturally clean at the bottom, or that does not mostly come so. It is also very desirable that in buying, the grower ought to be well convinced that he is dealing not only with an honourable but also with a liberal man, for otherwise he will lay out a large sum before he is aware of it, and be sadly disappointed. There are certain flowers, too, which come so different from one another that young florists would think them different varieties, and most tulips partake a good deal of this character; sometimes a bulb will throw a fine delicate flower for a season or two and be admired very much, in such case it has been no uncommon thing to honour it with a new name; Mr. Greig once wrote an article for the *Horticultural Journal*, in which he attempted to class tulips with their synonyms, and there, if the authority can be depended on, (and perhaps for the most part he was right) many tulips are said to bear seven or eight different names: one can hardly form an idea of the mortification a young buyer feels when he finds that instead of having seven or eight different flowers they are essentially the same. Suppose, for instance, he purchases Godfrey's Abercrombie, Gable's King, Gable's Duke of York, Sangio, Strong's Captain White, Strong's Captain Black, Strong's Admiral White, and Strong's Old Admiral White, he will be sore displeased on blooming them to find them all one flower; this fact is stated very confidently by Mr. Grieg, and we can answer for its being true with regard to a majority of them, from personal observation. Another instance of this wholesale naming occurs with the flower known as Bartlet's Platoff, which is constantly sold under all the following names, Page's George IV, Garnet's Trafalgar, Garnet's Waterloo, Gable's Glory, Strong's Lord Hill, Strong's Charles XII, Acre's Emperor, Nagle's Emperor, and Car's Waterloo. A third instance occurs with the flower known as Hutton's Optimus, which is also sold as Sir Sidney Smith, Prince of Saxe Coburg, Franklin's Lord Cockrane, Franklin's Washington, Bradley's Angler, British Hero, and Bugbird's Duke of York; fanciers may dispute the point, but it is no use to deny the

fact with regard to a large majority of them, we could give fifty instances of similar but not quite such extensive lists of names to the same tulips, hence the necessity of a careful purchase of an honourable and liberal florist or amateur, and if we can advise or assist any one in this particular we shall be happy to do so, for upon the first purchase often depends every thing. Many a young enthusiast has been utterly disgusted with his first attempt, and his disappointment has so damped his ardour, that he has thrown up the cultivation of tulips in despair. There are many flowers to be had cheap because they are plentiful and for no other cause; the very flower we have instanced Platoff, we should think might be bought almost by the peck. But we will endeavour to point out a few of each class that may be had very reasonable, though we strongly urge any body who wants a bed to buy one complete, for nearly every advertising florist will make great sacrifices to get rid of a bed whole. However, we will suppose the flowers have to be purchased of different people, we will commence with—

BYBLOMENS.

White ground with lilac, violet, or purple markings, some nearly black.

Violet Alexander, alias Violet quarto.*
 Roi de Siam, alias Acapulca.*
 Franciscus Primus, alias half-a-dozen names
 David Pourpre, alias Strong's David.*
 Desiderata, alias Violet Rougeatre, &c.
 Reine de Sheba, alias Groom's Mentor.*
 Transparent Noir, alias Numitor, &c.
 Washington, alias Hanibal, &c.*
 Bugbird's Hector, alias Adelaide, &c.
 Alcon, alias Tower of Salisbury.
 Holmes' King, alias Plus Belle.*
 Beinfait, alias half-a-dozen names.
 Ambassador de Holland, alias Several.
 Sable Rex, alias Butler's Attala, &c.
 Roscius, alias several other names.*
 Matre Partout, alias Erin go Bragh
 Incomparable de Holland, alias Belle Marguerite.

Rubens.

ROSES.

White ground, pink or red marks.

Reine de Ceres, alias Bartlet's Rosette, &c.
 Camuse, alias Brilliant, &c.*
 Catharine, alias Athalia, &c.
 Triumph Royal, alias La Heroine.*
 Ceres Belle Forme.*
 Ceres Blanc, alias Le Tendresse, &c.*
 Duchess of Clarence, alias Strong's Princess Victoria, &c.
 Thunderbolt, alias Pretiosa, &c.
 Catalani, said to be same as as Ceres Blanc, but we deny it.*
 Triumph de Flora, alias Domingo, &c.
 Manon, alias Prince William IV.*
 Bacu, alias Rose Bacchus.

Sur pas Thalestris, alias Bernard's Formosa, &c.

Walworth, alias Glaphira, &c.

Thalestris, alias Thalestris La Vrai.

Mantua Ducal, alias Ceres Royal.

Rose Clio.*

Madame Vestris, alias Princess Sophia of Gloucester.*

Claudiana.

Compte de Virgins.*

Rosa Blanca.*

BIZARRES.

Yellow grounds.

Godfrey's Abercrombie, alias Sanzoe, &c.

Bartlet's Platoff, alias Pages George IV., &c.*

Davy's Trafalgar, alias Duke of Clarence, &c.*

Lawrence's Shaksperere, alias Edmund Kean.

Polyphemus, alias Goldham's Albion, Nouri Effendi, &c.*

Charbonier, alias Pas Pompe Funebra.*

Gabel's Hector, alias Drinkwater's Emperor, &c.

Hutton's Optimus, alias Prince Saxe Cobourg, &c.*

Carter's Cræsus, alias Ophir, &c.

Cato, alias Junius Brutus, &c.

Emperor of Austria, alias Goldham's Reform, &c.

Sur pas Catafalque, alias Drinkwater's William Pit.

Coggershell Hero, Roi de Bizarre.

Leopold, alias many others.

Gloria Mundi.

This subject will be resumed during the season, as we have much more to say. It is, however, certain, that whoever buys the above will have the representation of 300 names.

GARDENS AND GARDENING OF THE ANCIENTS.

"GARDENING," says Lord Kaimes, "was at first only an *useful* art; and for my own part, I am led by some slight acquaintance with ancient literature to suspect, that there was nothing like *ornamental* gardening, at least on this side of India, until after the Christian era. I use the word gardening, of course, in its proper horticultural sense, namely as embracing the cultivation and disposition of flowers; whereas in the gardens described by the writers of old, I remember no mention of flowers, except such as grew spontaneously, and a few indigenous flowering shrubs, such as the rose, &c.; and these merely as accidents in the landscape, and not as part of its design. The gardens of the ancients, in short, were a mixture of lawn and grove, and the word should bear some such interpretation as we attach to it when speaking of *Kensington* garden. For example—the gar-

dens of Babylon, introduced by Semiramis, were nothing more than successive terraces raised one above another, to the height of the city wall, and planted with stately trees, so as to imitate the hanging woods on the ledges of the Median mountains. The gardens of Solomon were nothing more than magnificent groves of cedar and other giants of the Syrian hills. Homer, however, is the first who gives the *beau ideal* of a garden of his own time, in detail. In the *Odyssey* he thus describes the retreat of Calypso:—

Without the grot, a various sylvan scene
Appeared around, and groves of living green;
Poplars and Elders, ever quivering play'd,
And nodding Cypress formed a fragrant shade.
Four limpid fountains from the cliffs distil,
And every fountain proves a silver rill
In mazy windings wandering down the hill,
Where bloomy meads with vivid green were crown'd,
And glowing violets threw their odours round.
A scene, where if a god should cast his sight,
A god might gaze and wonder with delight!

There can be no doubt that the Greeks derived their taste in gardening, as in every other refinement, from the more eastern countries who preceded them in civilisation, and we may therefore take the gardens of Greece in her palmy days, as at least not behind their Asiatic prototypes in horticultural embellishment. A learned writer has erroneously supposed that Epicurus first introduced gardens into Greece; but Pliny (if consulted) would have told him, that this philosopher was only the first who had gardens within the walls of Athens, whereas, before, they had been without the walls, like the *Horti Suburbani* of the Romans. These gardens were, in fact, groves; and here Epicurus (however, afterwards mistaken by the world for a sensualist) taught the purest morality; selecting these agreeable spots for the double purpose of furnishing his disciples not only with philosophical instruction, but with a "clean and virtuous luxury."

To sum up, the ancients seem to have confined themselves to aboriculture; and in this department their practical knowledge at an early age was surprising. We will give a remarkable example of it. In the 47th vol. of the *Philosophical Transactions*, Dr. Mylus, of Berlin, gives an account of what he thought a very novel experiment, namely, the fertilising a female palm-tree in the garden of the Royal Academy, at Berlin, which had been previously barren, by impregnating it with flowers brought from a male tree growing at Leipsic. This might seem sufficiently curious in Dr. Mylus' day; Herodotus, three-and-twenty centuries before, mentioned the practice as familiar to the Babylonians, who, in cultivating the palm-tree, were forced to gather the flowers of the male tree, and carry them to the female if they expected to reap any fruit.

PRESERVATION OF ORCHARDS FROM THE RAVAGES OF INSECTS.

A CORRESPONDENT of the *Journal d'Agriculture Pratique* has given an interesting account of his despair at seeing the produce of thousands of his trees, each year destroyed by insects, and of his joy at discovering an effectual remedy. Year after year the young leaves were eaten away, and every summer witnessed barren branches, various remedies were tried, but without success. Limewater was, amongst other things, applied to the trees, but ineffectually, and the writer dwells on this fact particularly, as lime was at last the remedy which saved the crops. "I had," says the correspondent, "I had despaired of my dear plantations, when I thought of trying dry lime, reduced to a fine powder, and sprinkling it over the trees. I gave orders for a kind of watering pot, or rather a huge pepper-caster with a handle, in order to distribute the powder equally. It was about a foot high, and seven inches in diameter. I seized on the period when the leaves were just beginning to come forth, to try my experiment, and I sprinkled the trees plentifully with powdered lime. What was my joy to behold caterpillars and other insects betake themselves to instant flight, not, however, without leaving a number of their companions behind, deprived of life. In a little time my darling trees re-assumed an air of vitality. I continued my sprinklings, and I had at last the heartfelt pleasure of seeing them ornamented with verdure and fruit." In order that this plan should succeed, the sprinkling should take place when the trees are wet with the morning dew, or with a slight shower. The operation succeeds still better when a slight breeze bears the powder in the direction of that portion of the tree most attacked. When circumstances are favourable three men are sufficient for two or three thousand trees a day. The powdered lime can be taken out in wheelbarrows to be near at hand when required. The writer already alluded to mentions that he usually sprinkles the lime a little before the flowers come forth, for then it is that insects commence their ravages. If a later period is chosen, the evil will have been already effected. He advises a fresh sprinkling after the flowers are out, and he says that his additional expense will be amply repaid by the abundance of the crop.

WEEKLY JOURNAL OF GARDENING.

AURICULAS out of flower may have all the weather.

Polyanthuses out of flower may be turned out into beds again.

Water all newly planted flowers, and particularly seedlings.

Stick Carnations, Pinks, and other flowers that require it.

Turn Dahlias out of frames into places where they are intended to flower.

Destroy the caterpillars in Roses.

Turn out Fuchsias, Geraniums, &c. into the open borders.

Sow Carrots, for drawing young, second or fourth week.

Broccoli, purple cape, for autumnal supply, in this or next week; Portsmouth, white and purple, for the following spring, in the present week.

Borecole, Brussels Sprouts, and any of the Brassica tribe, for succession crops, now or during the month.

Cucumbers, either for picklers or for late supply.

Onions, for drawing while young, or for bulbs, to plant in the spring.

Plant Potatoes, the winter main crops, now and throughout the month.

Plant Celery in nursery rows, or some of the strongest plants into the final trenches, for early autumnal use.

Grape Vines in houses must be assisted by stopping the shoots before the fruit: useless shoots must be cut off.

The greatest care must be taken not to let the sun reach the Tulips, and to protect them from high winds. A very short visit of the former in the middle of the day would shorten the bloom considerably, and the latter would bruise the petals, and destroy the fine appearance in a few minutes.

Carnations and Piccotees, in their blooming pots, must be abundantly watered in the hot weather, but before the sun is well up, or in the evening after it has set. As the plants will sometimes throw up more than one blooming stem all but one must be removed.

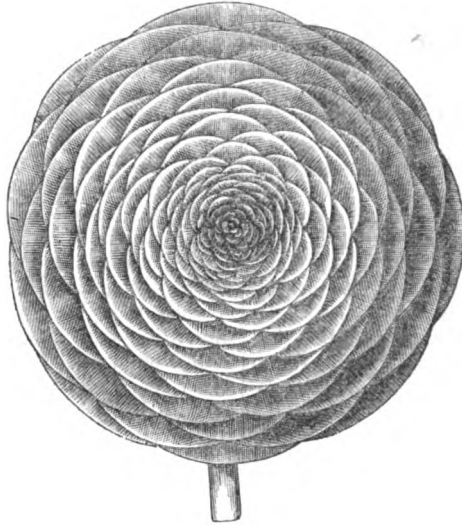
Pinks.—No more than two or three buds must be left on each stem of the Pink, and no more than one stem to a plant. In the absence of rain, they must be well watered.

Look well after earwigs among the Dahlias, for if it be left till they abound, nothing will get them completely under.

Visit the principal tulip beds, to select any flowers you may want, to learn the different styles in which the same tulip may come, and to make yourself acquainted with the names, that you may correct your own bed. The different styles of growth may be best seen at Bethnal Green, where they are extremely delicate; at Slough, where they are very robust; at Hampton, where they are grown in great perfection; at Bermondsey, where the old flowers are choice and true to their names. Select none but clean flowers, for those dirty at the bottom are worth nothing.

Gently stir the earth between the rows of Ranunculas and Anemones, giving air to the sorts, and keep them abundantly watered.

May 13, 1843.



PROPERTIES OF THE RANUNCULUS.

THE properties of the *Ranunculus* have been given in our first volume, and the representation of a side view was to guard the young fancier from taking a wrong notion as to the form of the crown. Many flowers are too high in the shoulder, and too flat in the face; but in roundness of outline we have already achieved a good deal. There are many flowers as perfect as the above sketch, and the regularity of petals observable there may be found in a majority of the present favourites. The *Ranunculus* approaches nearer to perfection than most of our florists' flowers, and the principal faults now to get over are their flimsy petals, which, independently of their own immediate blemish, brings others with it. No colour can be so dense upon a thin as it is upon a thick petal—the one gives a watery appearance to the white, and a weak character to any colour; the latter being more opaque, throws up the colours well, and makes the white appear purer and better. Some of the petals of *Ranunculuses*, even the favourite ones, are slightly notched; the extreme doubleness of the flower, however, makes this less seen, and the thinness of a petal less noticed. In raising these flowers from seed, or rather, in selecting them from seedling beds, thickness of petal, and smoothness, should be well looked to, for semi-double varieties with splendid petals will bring better flowers than more double ones, which are not so conspicuous, in the goodness of the individual petals. It is curious that all the number of years that *Ranunculuses* have been raised from seed there should be still so little variety in colour. It is exceedingly difficult to put twenty four different varieties into a stand without having some too near alike, and yet we see catalogues of hundreds of flowers under all kinds of

names, and every year adds more to the number. The great object is to continue raising from those with fine textured petals, and bright or new colours, even though there be only two or three rows of petals, for there is the greater chance of novelty in a better form. The largest collections grown round about town are, Lockart's, Parson's Green; Alexander, Kingsland Road; and several persons at Bethnal Green. Out of London, Tyso and Sons at Wallingford appear to lay themselves out for this particular flower, and are said to have reared some good seedlings annually.

WHAT IS TO BE DONE FOR FLORICULTURE.

THIS depends exactly upon what is intended to be done *with* Floriculture. If it is to be abandoned as a science, and to be chopped up with the Gardening interests in general, why let things go on as they are going; it is in a fair way to get cut up with all other suffering interests, and be talked of as of a thing that was. But if it be desirable to uphold it, there is much to be done. The first is to inspire confidence in the public, by turning the present snarling differences into rational discussions, and each man to recollect that too much regard for self is something like ripping open the goose for its golden eggs. There is too much jealousy of each other, too much of a disposition in amateurs to turn nurserymen, and too much anxiety among nurserymen to overreach amateurs, both evils capable of curing themselves, but not without some advance on both sides. There have always been too many persons mercenarily inclined to give full effect to shows; and people who might blush at it, have taken undue advan-

tage to obtain prizes. If any one boldly stands out to prevent the little bits of management which appertain to particular shows, he is a marked man, and if none do this, the awards at shows become mere means of pandering to the parsimony, or catering for the ambition of a few who get into the executive.

The present state of floriculture requires several coinciding steps, and it would be as flourishing as ever. There should first be mutual ground, on which all men of all opinions could meet,—say some new society, or some old one remodelled. Here the subscription should be so small as not to be an obstacle to any one joining it. Its meetings should be frequent, and nothing but floriculture and horticulture should be allowed to be discussed. It should not be considered as the abandonment of any other society to join the new one. The whole world of gardeners should know that such meetings were held, and that they could be of the party if they chose to do so; it should, in fact, be the mart for the congregation of the gardening interests, and the exchange of the floral world. Those who had flowers to sell should bring samples, without expense; and at these meetings should challenges of flower against flower be settled, comparisons made, and flowers tested openly—their merits and demerits be canvassed freely, and the benefit of publicity could at least be obtained by all who wished to obtain it. It would avail nothing if a few persons at first held aloof from this meeting; sociality would be soon established among people whose interests ought to be the same, and, if viewed properly, would be the same; and from the time at which such meetings were established would floriculture advance, because, as all who exhibit know, three-fourths of the pleasure derived by florists arises out of the conversation with others upon flowers and plants. Let those, therefore, who feel an interest in floriculture promote that which can alone induce social meeting among those engaged in it. It was this which moved it in 1832; it was the breaking up of this which injured it in 1829; and it is the establishment of social meetings in 1843 which will once more rouse it, and send it onwards.

THE DESCRIPTIVE CATALOGUE OF TULIPS.

WE have at length been honoured by a notice from the great northern light which, shone so conspicuously upon the world of flowers a few months since, and gave us a descriptive Catalogue of Tulips, which, as we observed at the time, might have been useful had it not been incorrect. Mr. Glenny answered this in our pages, and called upon the author to retract one very uncourteous as well as untrue assertion with which he set out. It is perhaps more than we ought to do, to notice a person who calls in the aid of ill-natured fiction, but as he has

taken vast pains to set himself right, and made himself out worse than we attempted to make him, it may be as well to assure him that having drawn from him an admission, or rather a proof, that he is unacquainted with the flowers he writes about, we are satisfied. We are aware that he has gone by hearsay, and described things that he was merely told were particular flowers, and that these people may have deceived him. We have done with the subject; we will not even quarrel with him for presumption in writing about things he was unacquainted with; but when he, with all apparent confidence, condemned Polyphemus for a foul flower, it was time to show the value of his Catalogue, and we entreat our young Tulip friends to examine this flower for themselves, and thus settle the value of the writer's capacity

AB UNO DISCE OMNES.

DOUBLE BRUGMANSIA.

THE *Datura Arborea*, now called *Brugmansia Suaveolens* is well known as a noble white funnel-shaped flower, of one petal, divided at the edges, and three or four inches across, hanging down all over a broad leaved free-growing plant, from three to six feet high, and beautifully perfumed. It is a greenhouse plant, which, however, may be brought forward in a stove, and be planted out of doors like a *Dahlia*. We have been favoured with a flower of a double variety which is not mentioned in the books, and is unknown to the principal nurserymen. The construction of the flower is curious; the doubleness is not caused by a repetition or multiplication of the petals, but by an elongation of the one, which, instead of joining and forming the funnel, continues like a roll of paper, forming by its folds funnel inside funnel, to all appearance, and adding great richness to the appearance of the blooms by the inner rolls falling lower as they reach the centre, which is as perfect on dissection as in the single ones. We have not heard whether this is characteristic of all the flowers on the plant, or merely a *lusus nature*, but if the former, it is a great acquisition as a variety of the *Brugmansia Suaveolens*, and is well worth a place where the other is grown, or even to the exclusion of the old single one.

WEEKLY JOURNAL OF GARDENING.

THE principal object of the amateur at this time is to, what we may call, make up his garden for the summer. He has to fill all vacancies in his borders with annuals from his seed pots, or seed beds, with perennials, or with plants from his greenhouse or frames. Mowing the lawn, if there be ever so little of it, is necessary to its appearance all the summer, for the shorter it is kept the more thick and velvety it becomes.

Among his Pinks and Pansies, one of the most important duties is, to watch and catch snails and slugs by every means in his power,—by tiles, the hollow side downwards, by stirring the earth a little round the roots, and finding them in their retreats; sprinkle also with lime.

Water both Pinks and Pansies with liquid manure, that is, water put to rotten dung, and stirred about—cow dung, very rotten, is the best—and the proportions are something like four bulks of water to one of cow dung, well stirred up, and allowed to settle, this will be good enough.

Plant out in the open ground all the Carnations and Piccotees that have not been put into blooming pots, there to grow, and be laid for stock, and perhaps to yield a good show bloom or two.

AURICULAS must be constantly examined to see that the hole at the bottom of their pots are not stopped up.

Make preparation for budding Roses by going over the briars intended to be used, and cutting close in all but the branches you actually mean to work upon. These may be left to grow more strong by June.

Part Polyanthuses very carefully, to have a portion of root to each heart, and plant them out in a shady border to grow all the summer. See they have plenty of water in dry weather.

Fill vases with *Nemophylla*, *Verbena*, *Coreopsis*, and other fancy annuals, to bloom them.

If you have any Dahlias not planted out, the sooner it is done the better, unless you wish to hold over some for late shows, and if so, let them be potted in size 48 pots, with good rich loam.

May 20, 1843.

EXPERIMENTS MADE IN THE GARDENS OF THE HORTICULTURAL SOCIETY.

NITRATE OF SODA, in a strong solution, has been applied to various plants with a view to ascertain its effects upon them, and to what extent it might be safely applied. Four ounces were dissolved in one gallon of water, and part of a row of peas was soaked with it; the peas were uninjured. The same solution applied to the same extent of a row of garden beans appeared to injure them. Strawberries in pots were killed with it in five days; kidney-beans in pots were killed with it in a fortnight. On vines, cabbages, seakale, and capscums, the effects were not apparent. The strawberry plants in pots did not appear affected for some days, the first symptoms were exhibited by the tips of the leaves, after which the whole plant was rapidly destroyed.

Mr. Gordon reported from the *Hardy Department*, that the following experiments had been tried on grass in the Arboretum with

Nitrate of Soda, Poittevin's disinfected manure and ammoniacal liquor, each having one rod of ground allotted to it, but with a division of two feet between the allotments.

The Nitrate of Soda, used as a manure on the square rod of grass, was in the following proportion, viz., $\frac{1}{4}$ lb. Nitrate of Soda, diluted with twenty gallons of water. This was poured on the ground through a rose on the 3rd of December, 1840; in about fourteen days (even at that dull season of the year) the grass was perceptibly greener and more healthy than any of that surrounding, which appearance it has retained up to the present time; it is also more vigorous than that which has not been experimented upon. The quantity of grass cut from this rod of ground, as well as that obtained from the others, will show the respective merits of each.

POITTEVIN'S DISINFECTED MANURE.—On the second square rod of grass, *Poittevin's* disinfected manure was used in the following proportion, viz.: 7 lbs. to the rod, or half a ton to the acre; allowing, therefore, each bushel of manure to weigh about 50 lbs., this would be at the rate of 20 bushels per acre, and the cost about 35s., independent of carriage. There was not the least perceptible difference between this square and the ordinary grass, either in appearance or weight. The disinfected manure when used was diluted with the same quantity of water as the preceding.

AMMONIACAL LIQUOR.—On the third rod of grass, Ammoniacal liquor was used in the proportion of twelve quarts to twenty gallons of water, to the rod. For about forty-eight hours after its application the grass became quite burnt up, and to all appearance dead; but in about six weeks it began to shoot, and eventually became the most conspicuous of the three, growing very vigorously, of a beautiful dark green, and far surpassing all the others in quality. This mixture also destroyed the moss and other annual weeds, and even very much affected the daisy and dandelions.

The following shows the proportions of grass produced by each rod.

| | On April 14, 1841. | | On April 28, 1841 | |
|--------------------|--------------------|--------|-------------------|------------|
| Ammoniacal liquor | 1st Cutting | 6 4lbs | 2nd cutting | 17 lbs. |
| Nitrate of Soda | do. | 23 lbs | do. | 12 lbs. |
| Poittevin's Manure | do. | 13 lbs | do. | 6 1/2 lbs. |

The grass adjoining, which had no manure, produced the same quantity of grass as that on which Poittevin's manure was used.

NITRATE OF SODA.—Mr. Thompson reported as follows from the *Orchard and Kitchen Garden Department*, upon the effect of Nitrate of Soda upon cabbages. Some Vanack cabbages were manured with dung and with Nitrate of Soda; the portion which had the dung manure is the best; the produce where the Nit. of

Soda was applied is also very good. The soil in the latter case, it may be remarked, was more consolidated than where the dung was buried. Thus the dung affords a mechanical advantage that cannot be obtained from liquid or other concentrated manures. It having been mentioned in a former report, that some plants had been killed by a solution of Nitrate of Soda, further experiments were instituted, from which it appeared that peas and beans are not easily affected by this salt, unless made very strong, but solutions frequently applied tend to check their growth. A pound of undissolved Nitrate was scattered over the leaves of one plant of sea-kale; a slight rain at night nearly dissolved the salt, and the sea-kale, although since exposed to bright sun, does not seem to be in the least injured.

HEALING BARK—An experiment made in order to try whether the bark of trees will heal over the heartwood of an amputated branch, has not given a favourable result. The bark was raised and turned back, and then brought over the end of the stump; where the lips of the bark came in contact, the union was perfect, but no farther. The section of heartwood became brown, as also did the inside of the bark that was made to cover it.

COLOURED GLASS.—Mr. Fortune reported from the *Hothouse Department*, that he had been trying some experiments as to the effect of coloured light on germination. On the 25th of March some seeds of *Nemophila insignis* were sown in two patches; one was covered with a common hand-glass, the other with a blue one. The seeds were above ground on the 3rd of April under the coloured glass, and on the 5th under the common one. The slight difference in the time of germination seemed to be caused by the moisture in the soil, which did not evaporate so quickly under the coloured glass as under the other. The plants under the blue glass soon presented a drawn sickly appearance, such as is commonly observed when they are grown in dark shaded situations.

NITRATE OF SODA.—Mr. Thompson reported from the *Orchard and Kitchen Garden Department*, that a plant of sea-kale, mentioned in the last report as having had a pound of undissolved Nitrate of Soda strewed over its foliage has since proved uninjured. Thus, whilst some species of plants are destroyed by a small quantity of this salt, the sea kale and the cabbage tribe generally, appear to be proof against its destructive effects.

CHLORIDE OF LIME has been tried unsuccessfully against the American blight on trees; the glaucous, wooly covering of the aphids proving a complete protection. The same tree was syringed with a solution of half a pound of potash, with very little effect on the insects beyond the mechanical removal of such of them as were not well secured in crevices of the bark.

AMMONIACAL LIQUOR—*Orchard and Kitchen Garden Department.*—R. Thompson reports ammoniacal liquor from the gas-works had been employed against the American blight on apple trees, diluted with about two parts of water; but it had not in that state proved effectual.

VARIOUS SALTS—*Stove and Hothouse Department.*—R. Fortune reports some experiments have been in progress to ascertain what effects would be produced upon pelargoniums by watering them with small quantities of different salts dissolved in rain-water. At the commencement of the experiment the roots of the plants were washed clean, to remove all the soil in which they had been growing, and were then potted in silver sand. By this means they would depend chiefly for nourishment upon the substances dissolved in the water, and it would then be seen whether these of themselves were sufficient for their support.

The salts were carbonate of ammonia, subcarbonate of ammonia, sal ammoniac, common salt, saltpetre, nitrate of soda, and carbonate of ammonia mixed with wood ashes. About two tea-spoons full of salt to each gallon of rain-water was the strength of each solution. The plants were then divided into sets of three each, which were watered with the different salts whenever the sand was dry.

Other two sets of pelargoniums planted in sand in the same manner as the others were watered with rain-water, mixed with the ammoniacal liquor of the gas-works, in the proportion of about half a pint to a gallon. In one of the sets the liquor was used fresh from the cask, in the other it had been exposed for some time to the action of the air.

The result of these trials seems to be, that none of these substances of themselves will support plants of this kind in a healthy condition. Carbonate of ammonia with wood ashes was the most beneficial, and the subcarbonate, the carbonate, and common salt, did not seem to produce any bad effects, as the plants here grew as well as some which were watered with pure rain-water. The remainder of the salts and the two kinds of ammoniacal liquor were certainly injurious.

Three plants of the same kinds were potted in burnt clay, three in pounded bricks, and three in charcoal, and all were watered with pure rain water. In these circumstances they grew better than any of the others, except those in the carbonate of ammonia and wood ashes; the two first, however, succeeding better than the last which was in charcoal; but none of them did so well as some others which were in common garden soil. These results were evidently for want of sufficient nourishment, in so far as the burnt clay and powdered bricks were concerned; the charcoal might produce other effects, but other experiments are still going on with this substance.

I have also been trying what effects would be produced upon *perlargoniums* growing in common soil by watering them with carbonate of ammonia, nitrate of soda, and Glauber's salts, dissolved in rain-water. The proportions of the salts were greater than in the first instance. Each plant which was watered with the salt was placed by the side of another of the same variety which was watered with pure rain-water. The difference between the plants watered with the salt in solution and the others was very apparent, the former being short jointed, having their leaves of a deeper green, and having more of the brown colouring matter in the stems. It is necessary, however, to use the nitrate of soda with great caution, as in proportions a little greater than here used it will destroy the plants. All the three salts produced the same effects, at least I could discern no difference.

GUANO, HARDY DEPARTMENT.—The Superintendent reported that he had tried several experiments with *Guano* upon plants in pots. In loam, containing one fiftieth part of this substance, *Verbenas* and *Salvias* became luxuriant in about the same degree as if potted in rotten dung. The same plants also flourished exceedingly in sand containing a similar proportion of *Guano*. The same effect, or even a more beneficial action, was produced upon them when peat was substituted for sand. But when rich garden soil was employed with the same proportion of *Guano*, the plants became languid and died. It was therefore inferred that the value of *Guano*, as a manure, will depend upon the soil with which it is employed, and that a quantity, which would be highly beneficial in poor barren soil, will become deleterious if employed in land previously rich and well manured.

EFFECT OF NITRATE OF SODA ON FLOWERS.—The following were stated to be the results of manuring plants with *Nitrate of Soda*.

In February, 1841, some old worn out garden *Roses* had a portion of this salt applied to them, at the rate of one cwt. per acre, or $\frac{1}{2}$ lb. to the rod. It was sown broad-cast all over the ground, which is easily done by mixing it with dry sand. About the end of April the ground became covered with a greenish appearance, such as is frequently seen in damp situations in the autumn. As the dry weather advanced that appearance ceased. The plants became much more healthy, and of a fine dark green; in the autumn they appeared far more robust than those adjoining. They were also less infested with insects than the latter, but this may have arisen from their being in a more healthy state. *Dahlias* were also tried with *Nitrate of Soda*, each plant having about $\frac{1}{2}$ oz. given to it, mixed with water. The plants operated upon became like the *Roses*, of a fine dark green, more robust and compact in their growth, and flowered rather more freely, and earlier than others which had

no *Nitrate*. It had no effect on the colours of the flowers. A few of these *Dahlias* were in about three weeks again supplied with an additional ounce, mixed with water as before, but without any additional effect being perceptible, nor was any further result obtained when some of the same plants had a third $\frac{1}{2}$ oz. administered to them about a month after.

Some *Verbenas*, *Petunias*, *Pentstemons*, and various other plants, were watered with the *Nitrate*, at the rate of $\frac{1}{2}$ lb. to the rod, and with the same results, except that they seemed to become exhausted in the autumn sooner than those which were not dressed with the *Nitrate*. This, however, may have been owing to the long wet autumn. *Nitrate of Soda* acts very quickly on plants; some stunted Oaks and a Silver Fir in pots became of a fine healthy green in about ten days after its application. It should be given in all cases when plants are beginning to be in full vegetation, and not when they are dormant; if applied then, it seems to have little effect. It should also in all cases be given in damp weather; if applied in very dry weather, and over head, it acts in the same way as common salt, by destroying the leaves and young shoots.

From the *Hothouse Department*, Mr. Fortune reported that during the summer some experiments had been in progress, with a view to ascertain the value, as a manure for plants, of the refuse left in the fabrication of *Prussiate of Potash*. This substance had been used in various proportions for the growth in the open ground of such plants as *Perlargoniums*, *Verbenas*, *Salvias*, and *Pentstemons*, but up to the present time, when the frost destroyed them, no effects, either deleterious or otherwise, had been produced.

CUTTINGS IN CHARCOAL.—Experiments have been in progress to ascertain what effects would be produced upon plants by potting, or striking them from cuttings in charcoal, or by mixing it in various proportions in the soil in which they were to be grown. From what had been published on this subject in "*Liebig's Organic Chemistry*," and elsewhere, I had been led to expect some very decided results, but, after varying the experiments in many different ways, nothing has happened which proves charcoal to be useful as a *chemical* agent in the growth of plants. When pounded and used by itself, it is very apt to get too dry, and then runs together and sets very hard. Some Orchidaceous plants, *Gloxinias*, and *Cacti* were potted in it, but they did not succeed, evidently from these causes above mentioned.

When mixed with the soil, in the proportion of two-thirds of charcoal to one-third of soil, and also in smaller quantities, such plants as oranges, *Ipomœa scabra*, *Gesneras*, and *Cacti*, grew very well in the mixture, but not better than others which were treated in the common way.

Cuttings of the common Caper, *Ficus elastica*, *Euphorbia*, *Jacquiniiflora*, *Ipomœa*, and various other kinds, were planted both in pounded charcoal and in different proportions mixed with sand; but the results were not more favourable to the charcoal than to the common sand usually employed for that purpose. The caper rooted freely in both ways, but the others did best in the sand. Many cuttings, when planted in pure charcoal, or even where that formed a principal part of the mixture, threw off their leaves in a short time, and rotted at the base.

From what has come under my observation during these experiments, I would not recommend this substance to be used by itself for the growth of plants or for striking cuttings; and if it does produce any good chemical effects when mixed with soil, these will probably depend in a great degree upon the constitution of the soil, in the same way as lime and chalk are only good manures for certain lands. But it is very possible that these effects are only mechanical, tending to keep the ground open, in the manner which renders ashes so beneficial to stiff soils.

NITRATE OF SODA.—A solution of Nitrate of Soda is found to be very effectual for killing slugs, of which the ground is this season so full, that the entire crop of some kinds of vegetables has been destroyed in the market gardens near London. The solution of Nitrate of Soda is more efficacious than lime-water where it can be applied without touching the foliage.

KYANIZED WOOD.—Two boxes, constructed upon the principle of Mr. Ward's cases, the one made of wood steeped in Kyan's tanks, the other of common wood, were filled with the same kind of soil and plants. After six months, the plants treated in this manner did not succeed well in either box, but those in the Kyanized one did quite as well as those in the other. It should be stated, however, that both boxes were painted.

In June, some Kyanized wood was put amongst the stems and leaves of *Calandrinia* discolor, and a common *Pelargonium*, and then covered with hand-glasses. At the same time hand-glasses were put over an equal number of plants of the same description which grew side by side with the others. After growing in these circumstances for three months, it did not appear that the Kyanized wood had produced any bad effects.

It appeared thus that wood dipped in Kyan's tanks produces no injurious effects upon plants in a dry and cool atmosphere; but it remained to be ascertained whether it would be equally harmless in a warm and moist one. Some plants, capable of standing a very high temperature, were put under a hand-glass in the stove, and several pieces of Kyanized wood were introduced amongst them. In about three weeks the plants began to look sickly, those leaves which

accidentally came in contact with the wood became yellow and withered, and a fine vigorous specimen of the sensitive plant was killed. The wood was then taken out, the plants top-dressed, and the hand-glass washed. The apparatus was put back in the same place, the wood excepted, when the sickly plants gradually recovered, their new leaves were fresh and green, and were not injured as they had been before.

EFFECT OF POISONS ON PLANTS.—On the 1st of April (rather an ominous day) seven hand glasses, with moveable tops, were placed side by side in the pit of a moist stove. Seven Balsams of the same size, and equally healthy, were placed below them, one in each. A small pan was then put under each glass to receive the following substances.

No. 1.—Half an ounce of mercury.

2.—Half an ounce of corrosive sublimate, mixed with wet saw dust.

3.—Was left in its natural state.

4.—Weak muriatic acid.

5.—Half an ounce of dry calomel.

6.—Half an ounce of dry corrosive sublimate.

7.—Moistened shavings of Kyanized wood.

The plant in No. 1, where the mercury was, became visibly affected on the 5th day, and in two days afterwards some weeds which vegetated in the soil also looked sickly; the plant gradually became worse up to the 15, when it had lost all its leaves, and was removed from under this hand-glass, and placed under No. 4, which contained the weak muriatic acid. This change of circumstances had a marked effect upon the sickly plant, which now began gradually to recover, and on the 30th of May—about six weeks after its removal—it was perfectly healthy.

At the time that the last plant was removed from No. 1, namely, on the 15th of April, another healthy one was introduced, which suffered in the same manner, and lost all its leaves in nearly the same space of time.

In No. 2, where the corrosive sublimate and moistened sawdust were, no bad effects were visible until the 12th day; but at that time the leaves began to curl and look unhealthy, turning yellow, and finally dropping off, so that on the 15th of May it was removed with scarcely a leaf remaining. Another healthy plant was then placed in the same circumstances, and suffered in the same manner, though not so rapidly as the first.

No. 3, had no preparation of any kind under the hand-glass, and the plant here continued to grow throughout the whole time of the experiments without suffering in any way, further than by being drawn up, and by having its top injured by the pressure of the hand-glass.

No. 4. The diluted muriatic acid had a most beneficial effect upon the Balsam in this hand-

glass; it grew more luxuriantly than any of the others, and the weeds in the pot vegetated and flourished in a very remarkable manner. Further, as before remarked,—the sickly leafless plant, brought here from No. 1, gradually recovered, and was soon in a high state of health.

The plants in Nos. 5 and 6, where the dry calomel and dry corrosive sublimate were, did not seem to be at all effected until about the 15th of June, and then only slightly; if this was owing to the nature of these compounds, their action must have been very slow.

In all these cases the atmosphere contaminated by mercury proved deleterious, affecting the plants by making the leaves curl at the edges, and become dry and yellow. The vapour of muriatic acid, however, revived them, and made them grow with unusual vigour.

The effects produced by the shavings of Kyanized wood were somewhat similar, and agree with other observations which have been made elsewhere. A frame was formed of this wood for the growth of Melons in the garden of the Society, but it was found impossible to succeed with it. In the *Gardener's Magazine* for September 1839, Earl Manvers states, that he had some rafters "steeped in the solution, at the strength of one gallon of corrosive sublimate to ten gallons of water," and that the effects upon vegetable life were of the most injurious kind, three fine healthy vines being killed, and the condition of the others being much affected. And finally, Messrs. Loddiges, of Hackney, were induced to use it upon a considerable scale in rafters for their orchidaceous house, and for many other buildings in their extensive nursery, where its bad effects were soon discernible; and if they had not been counteracted by painting over the wood, many of the valuable plants in that establishment would no doubt have been destroyed. In fact, after the lapse of several years they are still obliged to paint it frequently to prevent any bad effects.

From these experiments, it seems that we may safely arrive at the following conclusions: First, that the vapours which arise from mercury in a warm and moist atmosphere are very injurious to the health of the plant with which they come in contact. Second, that muriatic acid has probably a contrary effect, because plants which were placed under the same circumstances otherwise, were destroyed in mercurial vapour, while in the atmosphere of muriatic acid they grew with great luxuriance.

NITRATE OF SODA AND QUICKSILVER.—The first crop of peas, sown November 25, 1841, was totally destroyed; and another sowing, February 11, partially so. The destruction was effected under ground by a dark coloured slug, the same as that which eats the tubers of potatoes; 18 lbs. of Nitrate of Soda killed a vast number, but this could not well be effected after the crop

got above ground. The whole of the kitchen garden was therefore very early in the morning sprinkled over with six bushels of hot lime, and the dead slugs were to be seen as numerous as twelve in a square foot. This process has been since twice repeated with nearly similar effects.

Taking into comparison the expense of Nitrate of Soda and that of lime, in order to effect an equal amount of destruction, it has been computed that the lime is not one-tenth part so expensive as Nitrate of Soda, whilst it can be applied over most kinds of foliage without injury to such. But, on the other hand, Nitrate of Soda may be more advantageously employed in particular cases to destroy those that lurk at a considerable depth below the surface, and there feed, as in the case of the potato crops of last year, which were in many instances destroyed to an extent quite unprecedented.

ORCHIDACEOUS PLANTS.—The collection of orchidaceous plants in the garden has been much increased of late years by the introduction of many rare and beautiful species from the high lands of Mexico and Guatemala. When these were sent home, Mr. Hartweg informed us in his letters, that the thermometer was sometimes near the freezing point where many of them grew; and this was confirmed by the quantity of small mosses which we found growing upon some of the branches to which the plants had attached themselves. I, therefore, about two years ago removed many of them into a house, which is kept cooler than the orchidaceous stove, and they have succeeded much better than others of the same kinds which were allowed to remain in a high temperature. Many of those which are most unmanageable in the orchidaceous house succeed here without any trouble; it is evidently the most natural place for them, as in other circumstances they are over excited, growing sickly and languid, forming smaller pseudo-bulbs and leaves every year, and finally perishing.

Mr. Loddige and, I believe, Mr. Bateman, have both experienced the same results; it is, therefore, a circumstance which cannot be too well known, because many persons have been deterred from growing orchidaceous plants by believing that they require such a high temperature. The house in the garden where they are grown has no artificial heat during the greater part of the summer, and in winter it is kept at about 55 degrees. The air, however, is always kept more moist than in a common greenhouse.

GRAPES ON FLINT WALLS.

MR. GEORGE SHIELLS, of Erskine House, near Glasgow, sent a communication on the cultivation of Grapes on fluted walls in the open air in Scotland. The author premised that his vine

border is composed of a strong loam, upon a porous whinstone bottom, and is mulched over every winter with littery dung. In the spring the strawy part is taken off, and the remainder forked lightly in. The border is well watered with drainings from the dunghill two or three times in the course of the season.

In former years, when the summers were more warm and sunny, his practice was as follows.

About the end or April, or beginning of May, when the clusters began to appear, a double net was placed against the wall to protect them, having the upper side fixed over the projecting edge of the coping, and the under side fastened to stakes, placed four feet distant from the wall. This netting was allowed to remain until the end of June, or until the fruit was set. Fire heat was not applied until the middle or latter end of May, in order to bring the clusters to blossom early in June, so that the whole crop might be set by the end of that month. In bright sunshine very moderate fires were kept during the day. If the fine weather continued the fire was omitted from the middle of July till the middle of August, after which time the wall had become considerably shaded by the foliage. The fire was then renewed, and kept somewhat stronger than before through the day, until all the fruit was gathered.

He stated also that for some years past there has been so little sunshine in summer, that he has been under the necessity of beginning to put fire to the wall about the middle or end of April, and continuing it night and day until the crop has been gathered. The heat is very moderate through the day in bright sunshine, until the leaves have attained their full size, and have partially shaded the wall; but afterwards it is kept stronger through the day than at night; at noon, in bright sunshine, the air within three or four inches of the wall is very warm, often ninety or a hundred degrees, while at the same time the hand can be held on the hottest part of the wall without inconvenience. He has no thermometer permanently placed at the wall, and he has only tried the heat occasionally; but he thinks that during the summer months the air at four inches from the wall, at six o'clock P.M., ranged between sixty and seventy degrees, and at six A.M. betwixt fifty and sixty degrees; but it was frequently lower than sixty degrees in the evening, and than fifty degrees in the morning.

When the grapes are pretty well coloured, a net is put over them to guard them from the birds; it also prevents their being injured much by wind and rain; and if the net is previously dipped in coal gas water, and well dried before being put up, the ripe grapes are seldom attacked by wasps.

He calculates that the expense of heating the wall for a season does not exceed thirty shillings upon an average of seasons.

Black Hamburgh grapes begin to colour about the 6th or 10th of August, and some are ripe in the latter end of September, or much earlier in fine seasons, if required. In the beginning or middle of November what remains of the crop is cut, and preserved in a dry airy room; the fire is then discontinued (for a little fire heat is continued until the crop is off), and in a week or two afterwards in mild weather the vines are pruned.

The wall is twenty-one inches thick, and is coved with a saddle-backed coping, which projects four inches on each side, and has a small groove under the edge to intercept the water which flows down the slope of the coping. It is about fifteen feet high, and the length, which is occupied with vines, and wrought by one fire, is about thirty-six feet.

The bearing branches of the vines are about two feet six inches apart; the longer branches of the vines, occupying the lower part of the wall, bear only on the upper half of their length; all the others on their whole length. Twenty or twenty-five clusters of black Hamburgh grapes are considered sufficient for each vine covering a space of wall twelve feet by ten. Muscadines being much smaller, double that number is allowed on each vine.

This plan is very simple and economical, as the heat which the water conveys is immediately communicated to the sand or sawdust, and from thence to the roots of the plants plunged in those materials. On this account it is well adapted for propagating houses, and indeed for any buildings in which Pines, Cucumbers and Orchidaceous plants are cultivated. Any requisite degree of moisture in the atmosphere may be obtained by leaving apertures in the slate slabs, which cover the tank, to allow the steam to rise through.

The following is a sketch of the apparatus; *a*, sides of the tank, 4 inches deep, 20 feet long, and 5 feet wide; *b*, partition in the tank, round which the water circulates; *c*, entrance of the water from the boiler; *d*, pipe through which water returns to *e*, the boiler.

JUBEA SPECTABILIS, A NEW PALM FROM CHILI.

It is chiefly in the middle provinces that this palm is found. It is not a common tree, being very partial; but several estates owe much of their value to the number of these palms, of which, though the stem is useless, the leaves, sap, and fruit, yield a large income to the proprietor. For thatching houses, the leaves are considered the best and most durable material; the sap boiled to syrup is used as an agreeable substitute for honey, and the small nuts, about an inch in diameter, of which every tree produces a great number, are highly esteemed, and form a considerable article of ex-

port to Peru. A curious method is employed to free the nut from the green husk that envelopes it; a process formerly attended with great loss of time, and much trouble. A number of cows and oxen are driven into an enclosure where a quantity of this fruit is spread, and being very fond of its husk, they presently set to work eating the fruit, very slightly masticating it in the first instance, and swallowing it whole; afterwards, while chewing the cud, the nuts are rejected, and when the meal is finished, a heap of them is found before each of the animals, perfectly free from the husk; the cattle being thus supplied with food at a season when little grass remains on the hills, at the same time that they effectually perform a very useful operation. A valuable syrup is also furnished by this plant by boiling down its juice.

The land in which these palm trees grow is damp and sandy, and is watered by a considerable rivulet. On entering the valley the palms are scarce, and amongst bushes two or three appear together; but on advancing farther, they increase in number, and I found clumps of thirty to fifty, being also informed that further in the interior they had taken almost exclusive possession of the land.

"The workmen distinguish two palms by the name of *Capitanas*, which are the highest;—one they call *Geaneos* (twins), because it produces a second shoot from the middle of the tree; the other is called *Amarilla*, on account of the foliage being yellow. One of the *Capitanas* which I saw was, without doubt, 130 feet high, and appeared to me to be as tall as any of the trees in our Brazilian forests; it was impossible to obtain the cocoas on account of its great height. The nuts germinate after having been planted one year, but grow very slowly, and at the expiration of a hundred years they begin to bear fruit.

"It is during the dry season only, which occurs from October to April, that the syrup is made. For this purpose, the palm tree is partially cut through near to the root, and a rope being fastened to the branches, it is forced down to the ground, but with care, in order to avoid its being broken; this frequently happens, in which case it does not yield juice. The female trees only are cut down. The leaves of the palm tree being stripped off, a piece is cut out of it, in a cross direction, from which the juice begins to run. When it ceases, another aperture is made higher up; this is repeated every time the flowing stops, until the sprout or top of the tree, called by the Chilians, *Palmito*, is approached to within about nine inches of its base. I was told that this top part when exfoliated is tender, and presents a pith, which, either boiled, roasted, or cooked in any other manner, is excellent; this I can readily believe, because our Brazilian palm is of the same nature, and is highly esteemed.

"The juice obtained from the palm trees is immediately passed into copper cauldrons, in which, by a process similar to that used in the manufacture of sugar in Brazil, and with intense heat, it attains the necessary consistence. The syrup is taken to Santiago in sheepskin bags, fastened upon mules' backs; its appearance and taste resemble those of molasses.

"This syrup may be refined to a very high degree, and the proprietor of the estate of *Cocalan* intends to make experiments in the distillation of rum, which will be as good, I think, as that made from sugar cane. He cut down this summer, upon his own account, 500 palm trees, and sold 250 to a maker of syrup at 4½ dollars each. It is supposed that each palm tree produces, upon an average, an *aroba*, or 32 lbs. liquid measure, of syrup, and each *aroba* is sold upon the premises for 12 dollars.

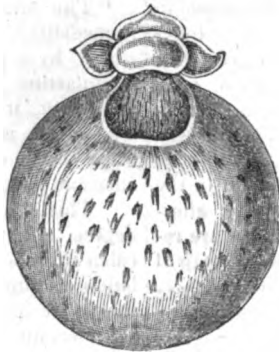
"The palm tree begins to blossom in October—this is the time that it ought to be cut. The cocoas are ripe in March; they are round, and of the size of a walnut, white inside, and having a small cavity in the centre; the taste is similar to that of most of our Brazilian cocoas.

HEATING HOTHOUSES AND PITS.

NEW MODE OF HEATING.—A paper was read from Mr. W. E. Rendle, of the Union Road Nursery, Plymouth, upon an economical mode of heating Forcing and other Houses without pipes, flues, hot dung, or any fermenting material; the following is a description of the plan. In a house 24 feet long and 8 feet wide, a wall about 3½ feet high is raised so as to form a pit; a space about 20 inches wide being left all round for a walk. On this wall stands a wooden tank, 4 inches deep, and divided lengthwise, with the exception of a few inches at one extremity, by a partition. This tank is filled with water, and is connected by means of a small pipe with one of Shewen's conical boilers. Upon lighting the fire, the water, as soon as it becomes heated, rises of course to the aperture *c*, and forms a current to the point *d*, where a pipe is fixed in the bottom of the tank, through which the water presses down into the boiler, and thus a regular circulation is kept up. The water can, in the course of an hour, be raised to 150°, at the cost of about twopennyworth of fuel, and a very small fire will maintain it at that temperature. On the top of the tank are slate slabs, upon which a layer of sand or sawdust four inches deep is spread; this is surrounded by a board on edge, to prevent it from falling over the sides of the tank.



No. 1.



No. 2.



No. 3.

PROPERTIES OF THE CALCEOLARIA.

THE plant should be shrubby; the foliage thick, and dark green; the habit bushy; the wood strong.

The flower stems should be short and strong; the foot-stalks of the blooms elastic, and branch well away from each other, to form a rich mass of flowers, without crowding.

The individual blooms depend entirely on the form of the purse, and it should be a perfect round, hollow ball. The orifice and calyx cannot be too small, nor the flower too large.

The colour should be very dense, and whether it be a spot in the middle, or stripes, or blotches, should be bold, and well defined, and the ground should be all one colour, or shade, whether white, straw colour, sulphur, yellow, or any other.

The colour of a self should be brilliant, and all over the same actual shade; dark flowers, with pale edges, or clouded and indefinite colours, are bad, and unfit to show.

The bloom should form one handsome bunch of pendant flowers, commencing where the foliage leaves off; and the flower stems should not be seen between the foliage and the flowers, which should hang gracefully, and be close to each other, the branches of the flowerstems holding them, to form a handsome spreading surface.

We cannot well give the properties of this flower without acknowledging that Mr. Green has already given an article on the same subject. It has been pointed out to us since ours was written, and we are not surprised that we differ upon the most essential points. This comes of our wanting flowers better than they have been yet produced, and of growers taking their own best for a model, and making, or rather endeavouring to make, them patterns for all future growers. Now, there is no good reason why the Calceolaria bloom should not be as round as a cherry. It is only fair, however, towards the writer, who limits the beauty of all future flowers to the quantity of beauty he has already produced, to give his own version, and that it may not suffer at our hands his own illustration also.

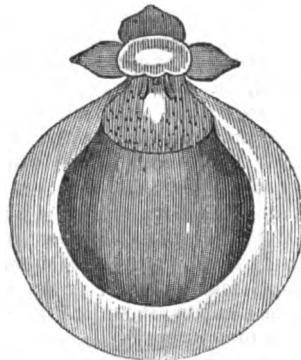
The above cut, No. 1, represents the original form of the flower; No. 2 represents the front

view, and No. 3, which is on a smaller scale, the side view, of a flower as it should be.

The error which people fall into in settling the points in a florist's flower is, that they are guided by what has been done, instead of what would look the most handsome. Take a side view of a Calceolaria, and observe how bald, and meagre, and untidy the plant looks: imagine the flowers round and you create a beautiful object. This is merely deciding that the thicker a flower is the better, until it is as deep as it is wide.

Whether Mr. Green's diagram, copied line for line from the *Chronicle*, is more like an empty crab shell, or a raspberry tart, is a matter of difference between different people; but as we are told, by a friend of Mr. Green's, that the dark part is not meant to represent the hollow, but a dark spot on the surface, this has enlightened us a little; for we had made up our mind it was intended for the hollow, and had condemned it as a most extraordinary fancy; as it is, the only error committed was not informing us what it meant.

MR. GREEN'S PROPERTIES.



"The properties which constitute perfection in the Calceolaria consist in the lip forming a perfect circle, even round the edges, not flat, but well raised in the centre, presenting a bold convex surface. In all cases the colours should

be clear and distinct, with the dark markings having a rich, velvety appearance; the petals and calyx ought to be large and full, with the flower stems short and strong.

"The shrubby kinds are much the best; the flowers are quite as large and as beautiful as the herbaceous sorts; they are much easier of cultivation, and are capable of being made much finer specimen plants."

So much for the properties laid down by Mr. Green and ourselves: one of us is wrong. If the flat flower will bear looking at all round, and appear as rich as a globe; in other words, if the side of a thin flower looks as rich as the side of a round or thick one, why we are wrong; but if ours would look better than his we are right, whether the thing can ever be attained or not.

G. G.

CULTURE OF THE CALCEOLARIA.

WHETHER we regard the elegance of form, the variety and beauty of colouring, the duration of the period of blooming, or the abundance of their flowers, there is scarcely any tribe of plants more ornamental, or better adapted for the conservatory, greenhouse, or flower verandah, or for planting out, during summer, in beds or clumps, or as single specimens in the open garden.

Though the era of Calceolaria, as compared with geraniums, heaths, and other older favourites of the greenhouse, is as of yesterday, yet the ease and rapidity with which they can be improved by cultivation, and the exquisite symmetry of form, and delicacy of colouring in their flowers, which have already been attained, have secured for them a degree of popular favour, which perhaps no other *genus* (with the exception of the *Fuchsia*) has acquired in so short a time.

Although the annual *C. Pinnata* was introduced from Peru in 1773, and the perennial *C. Fothergillii*, a purple-coloured species, from the Falkland isles, in 1777, these were either lost, or scarcely known, and little cultivated till within the last twenty years, when new importations drew attention to this interesting family. In 1823, *C. Rugosa*, otherwise *C. Crenata*—*C. Intigrifolia*, otherwise *C. Viscosissima*, both shrubby, and *C. Corymbosa*, a herbaceous kind, all yellow flowering species were introduced from Chili. But it was not till after 1827, in which year *C. Arachnoidea*, a purple flowered herbaceous species, was received from the same country, that much interest was taken in their improvement. Indeed, till within the last ten years, the attention bestowed on their cultivation was very partial. The richer colour, and more elegant form of *C. Arachnoidea*, though a very small flower, afforded hopes of an improved progeny by cross impregnating it with *C. Corymbosa*, possessing a much larger, though a coarser bloom. Mr. Gillen appears among the earliest on record who tried the experiment of crossing *C. Arachnoidea*. Mr. Menzies, Mr. Major,

Mr. Green, Mr. Plant, and a host of others followed it up, with increased success. From the above origin are derived most of the exquisitely beautiful herbaceous hybrids of this tribe, which at the various exhibitions throughout the kingdom, engross so large a portion of the public admiration. Cultivators appear to have ceased to push their experiments farther by crossing others of the original species, by which still more interesting results might have been attained, namely, the production of a variety *hardy enough* to withstand the frosts of our ordinary winters, and in all respects as beautiful as the offspring of the more tender species last mentioned.

To enable those who are desirous to follow up farther attempts at improving this interesting family—and, from a long experience, I can assure them it will afford them much gratification—I shall, in a few words, instruct them how to proceed: and I may premise, that what already has been achieved in this tribe, has upset one of the many erroneous notions which were at one time entertained as to the laws of hybridization, it having been laid down that a *herbaceous species would not cross with a shrubby species of the same family*. Mr. Green, one of the most successful cultivators, succeeded, and so have others, in crossing the herbaceous progeny of *C. Corymbosa* and *Arachnoidea*, both herbaceous kinds, with *C. Intigrifolia*, otherwise *C. Viscosissima*, a shrub from whence many truly beautiful frutescent or shrubby kinds have been produced.

I. AS TO CROSSING.—I would suggest that *form and size* should be the distinguishing features of the one parent and *colour* of the other. (1.) Form is the first quality, and the outline of a fine flower should present a perfect circle in its front view; it should not swell up into a globular shape, but appear gently convex, the aperture circular, the top or lip rather high, and the calyx or cup well developed. (2.) As to *size*—Many good flowers are of the size of a half crown piece: larger are shown; but when extraordinary size is obtained, it holds in this, as in other florists' flowers, that it is generally at the expense of form and of colour, or of one or other. A large bloom, combined with these qualities, is, however, very desirable. (3.) As to *colour*—the results here are even more uncertain than even form or size—as from seed of the same pod I have got every shade of colour, from the lightest straw to the deepest crimson; and it not unfrequently has happened, that seed from which I least expected good kinds, have often made the best returns. Disappointment might arise from nature, or some wandering insect anticipating or interfering with my experiments. The first thing—having selected the plants to be crossed—I would suggest to be done is, with a small instrument—a pair of wire pincers or a tooth-pick will do—to remove the anthers from either side of the stigma before the pollen appear;

for *then*, the pollen being so subtle, it is next to impossible, in detaching them, to prevent self-fertilization. Let the flower stand in gentle *sunlight* till the stigma is covered with gluten, which will make it to glitter at the summit, then apply the pollen, not with a camel hair brush, as is generally recommended, but by detaching, with fine pincers, from a bloom of the plant, whose pollen is to be used, one of its anthers having the vessel containing the pollen fully burst open, and then apply it very gently to the stigma of the plant to be crossed. I do not approve of repeated applications—twice, and on consecutive days, will suffice. Coloured silk threads may be tied round the flower stalks to denote the sources of each seed pod, taking care to use *fast* colours to withstand the sun. I tie a thread, say of *blue*, *red*, *yellow*, or other coloured silk, round the stem of the plant whence the pollen was taken, and that thread tied round the foot stalk of the flower crossed, though on a hundred separate blooms, sufficiently denotes the origin. Fertilization should be begun early in May and continued till July. I prefer performing it from eleven to one o'clock of the day, and always in *sunshine*. The seed ripens in from four to six weeks.

11. AS TO SEED SOWING AND MANAGEMENT OF SEEDLINGS.—I would recommend the seed to be sown as soon as it is gathered, which should not be done till it is *fully ripened*. This is indicated by the *capsules*, or seed pods, changing from green to a brownish straw colour, and by the seed being found of a coffee coloured brown. I repeat, let it be *fully ripe*, and avoid touching or squeezing the seed pod, as the young amateur is apt to do to ascertain this. I find the seed will grow perfectly well, as most seeds will, though gathered in a greenish state, if *immediately* sown. Professor Lindley, indeed, ("Theory of Horticulture," p. 182) seems to lend the weight of his authority against allowing seeds, which are to be *immediately* sown, to be fully ripened. "The complete maturation of the seed," he observes, "is a *disadvantage* when it has to be sown immediately after being gathered." If the Doctor had limited this remark to the germination in *this* case taking place more slowly from *ripe* than from unripe seeds, (for he insists, if the sowing is to be *deferred*, on the necessity of having the seeds *fully ripened*), I have nothing to oppose to his doctrine, which I have myself tested. But if fine large flowers are desired, these can alone be expected from seeds ripened to dryness. I have been taught this lesson by sad experience. The seed may be sown from July till the middle of September, *not later*. Select pots or pans, filling them up, the former three inches and the latter two inches, with crocks or drainage (avoiding cinders for that purpose), put a little moss over the drainage, and over it put the *siftings* of the soil, if not larger than the size of peas; then fill up to within one-

eighth of an inch of the rim. Lift, through a fine hair sieve, as much more soil as will fill the pot flush with the top; make the surface perfectly smooth and level, by gentle pressure, then sow the seed; and the better to divide it, mix it with some white pounded sand-stone. Then sift a very thin sprinkling of soil over, in which a small portion of heath mould may be mixed. Some prefer a little peat throughout the soil; and if such as is used by nurserymen be at hand, let it form one-third, not more. For my own part I use no peat, fine dark loam [shun the red] from an old rich holm pasture, should form one part, sand another part, and leaf or vegetable mould a third. This compost is admirably adapted both for seedlings and grown plants. In place of watering, "through a fine rose," gently immerse the seed pot or pan in the cistern, or a tub, so as the water may *ascend* through the bottom, repeating this mode of watering (which should be sparingly applied) till the seeds are through. Place the seed pots in a warm shaded part of the greenhouse, or, still better, in a hot-bed, where the temperature ranges from 55 to 75 degrees, and the seeds will appear in a short time. When they have four leaves, prick them out in pans an inch apart. Shade from the sun for a few days. In a month or so pot them off in 60-sized pots, in which, placed near the light, they will stand the winter. Some of the earliest require another shift in the beginning of November. I have had many hundreds standing in 48-sized pots all the winter; but the great mass should be left (for convenience sake) in sixties. All these, early in February, I shift into *forty-eight's* or *forty-two's*, according to their growth, and in April most of those which have been wintered into 48-sized pots are fully in bloom, and most of those kept in sixties produce flowers before the close of May. Care must be taken, by occasional fires, to keep out damp, as well as frost; and all decayed leaves should be picked off.

Few who have not experienced it can estimate the pleasurable interest with which the florist or *amateur* watches the *debut* of each fair competitor for future celebrity to itself and its gratified raiser.

PROPAGATION.

This may be accomplished at any period, from *April to August*, by cuttings, struck either in water, or in sand or sandy peat; or from the latter end of autumn (excepting *December* and *January*) to April, or even *May*, by detaching shoots from which rootlets, during that damp season of the year, spontaneously emanate while on the parent plant.

1st. BY CUTTINGS IN WATER.—The cutting should be cut off right through, not obliquely, with a sharp knife, just under a joint, *i. e.* below the knot from which the leaves shoot out, and these leaves should be cut off at their lowest

base, *taking great care* not to wound the cuticle or rind of the cutting. Put the cuttings into the glasses or vessels in which they are to be struck, but not so deep as to immerse the second joint, from which the lowest leaves emanate. Rain water is to be preferred; but soft water of any kind will do, changing it as often as a greenish gum gathers on the bottom and sides of the glass, or on the surface of the water, the **FREE ACCESS OF AIR**, which the gum would prevent, being of the last importance to the pushing of the roots, whether in water or in soil. If a hot bed is in operation, sink the glass into it, so as that the temperature of the water remain at about 75° Fahr. They will strike in ten days or a fortnight, and longer or shorter as the heat exceeds or falls short of that medium, but it will fail if much above 80° or below 60°. Glasses placed on a flue of a greenhouse, or in a stove where the temperature ranges from 55° to 80° will succeed nearly as well. Keep them out of sunshine for eight days.

2nd. By **CUTTINGS IN SAND, or sandy peat**; though with the aid of heat this may done all the year through (*November, December, and January* excepted); *July and August* is probably the best season. The *shrubby* kinds may be readily struck singly in *thumb* pots, or by dozens, placed, say two inches apart, in *pans*, dressing the cuttings as above directed, and inserted not more than half an inch deep in any *compost* that admits of a ready access of air to the base, provided it is not composed of decaying vegetable matter. Be careful to drain the pots and pans to one-third of the depth. Of the *herbaceous* kinds, slips may be taken off with a heel, and may be managed precisely in the same way.

3rd. By **SHOOTS** *slit off with* **INCIPIENT ROOTS while attached to the plant**. The first object is to ensure this result. It occurs *naturally* in the damp months from *November to April*, and when roots are so formed, the shoots from which they spring may be detached, and put into small pots *at any time*. Both *shrubby and herbaceous* kinds are during this season sometimes inconveniently prone to form such roots, the former even to a foot above the pot; and where the house is kept moist (which is highly favourable to the successful culture of this plant in summer, though dangerous in winter), the growth of such roots will be thereby readily promoted.

AFTER CULTURE—Soil, Shifting, &c.—I have grown many thousands, trying all soils, but I have succeeded but with the following *compost*: *one part* loam, or rotted turf still better, taken from an old pasture; *avoiding red* coloured loam, in which there is an oxide of iron; *one part* leaf mould, *one-fourth part* rough river sand, and *one fourth part* perfectly rotted *cow*, or, failing it, *hot bed* dung. The *one shift* system now in vogue will answer admirably, as

I have found, with this plant, especially if rotted turf is used for the loam, and an inch and a half of crocks, freestone, or broken bricks (avoid cinders), are used as drainage, with a very thin sprinkling of moss to keep the soil from choking it up.

But there is one requisite above every other indispensable to the perfect culture of this plant (and I hold it to be essential to almost every plant whatever), viz, to provide for **THE FREE ACCESS OF AIR, at every stage of its growth, to its roots**. I have grown it in rough pieces of rotted turf alone, and the result has gratified my highest expectations. I mean to try it in moss. There is probably nothing *new* in this. Plants may have been grown in turf, as they have been in moss before now; but the success attending their culture in such *media* has been attributed, so far as I have found any reasons assigned for such success, to one circumstance merely—namely to this, that while such substances absorbed and retained a sufficiency of moisture for the supply of the plant, the porosity, or open texture of the moss, admitted at all times of a free **DRAINAGE**, and precluded the water from stagnating. But *the free admission of air to the roots*, which I hold to have been of the greatest advantage of all, was overlooked, and remained undetected. As I mean to pursue the subject in a separate article very soon, I abstain from enlarging on it farther here; enjoining it however, as a requisite more essential to the culture of this plant than almost any other, excepting *Orchidea*.

Blooming.—As the petals shoot up for bloom the flower stems should be neatly trained to stakes. *Split lath* should be laid in for this purpose. The blooms should be made to show their panicles, or corymbs, from the pot upwards, and never delay training till the flowers are blown, as, from growing tall, getting entangled, &c., they cannot then be made to look handsome. Let the training, therefore, be proceeded with as the flower stems shoot up; and, whether trained as a *cone, upright column*, or with a *spreading head*, the extreme beauty of the full-bloomed plant will amply repay the attention bestowed.

Manure Water, composed of *cow, sheep, or pigeons' dung*, steeped till it has become of a brown colour, or the strength may at once be obtained by pouring boiling water over the manure, diluted in the proportion of *two-thirds to one-third of pure water*, should be occasionally applied, but not oftener than twice a week at *this stage*, not earlier, and finer and larger blooms will be secured. If the plants are grown in *moss*, manure water is, of course, more necessary; but I must apprise beginners that manure water is very apt to choke up the pores of the soil in the pot, to the exclusion of *air*, besides causing many of the delicate pale, or lilac tinted varieties, to become *flushed*. All such

flowers, but especially those of glowing crimson, and indeed all the shades of crimson, purple, and scarlet, whether selfs, or having the colours blended with others, should, if meant for show, be shaded from all except the morning and evening sun.

General Directions.—The *aphis*, or *green fly* is the greatest, indeed the only formidable enemy to this plant. *Tobacco smoke* is the most effectual means to destroy it, as well as its *larvæ*. Procure from a tobacconist tobacco paper, generally sold at sixpence per lb., light a piece of peat, where such can be got, or dry cow dung will do, put it into a flower pot having a hole made in its side to blow through, put the tobacco paper (which, if not moist, should be damped with water) on the live peat, put the pot containing it on another pot inverted, then blow with a pair of bellows. As few people can long abide the smoke, the pot may be so placed as to admit the operator to blow it from the outside through a broken pane or hole in the door. As the insects sometimes recover, especially if the night has been blowy, a *second fumigation* should be made the following night to make their destruction more effectual. A still, damp night is best.

In *summer* the *Calceolaria* delights in a *moist atmosphere*, to secure which, in hot weather I drench the flues and passages with water. Before they come into bloom, *i. e.*, in the latter end of *April* and beginning of *May*, they should be well syringed over the leaves at night. In winter, however, the leaves of the plants *cannot be kept too dry*: the least moisture in them then being apt to damp them off. All decayed leaves should be carefully picked off as soon as detected, and water to the roots *very sparingly* applied.

Fires will be very little required, unless to dry up damp, till January, when the severest frost occurs. I have often found the thermometer below freezing within the house in the morning, without the plants sustaining injury, provided they are suffered to recover gradually; to endure which, let no fire be put on *then*; and if the sun should burst suddenly, let the plants be shaded, and the house kept cool by opening the sashes.

By attending to the above directions, which I have endeavoured, at the hazard of being considered *tedious*, to make sufficiently explicit, the *Calceolaria* may be cultivated by the *uninitiated amateur* with as much ease as the *Geranium* or *Fuchsia*. It is more hardy than the former, and scarcely less so than the latter; and from its extreme beauty it well deserves to be as extremely popular as either.

ISCANIUS.

THE SOUTH LONDON FLORICULTURAL SOCIETY.

THIS exhibition is evidently getting up with respect to the quality of its shows, and the second for the season produced a very good sprinkling of Florists' Flowers. The Tulips were very finely grown—both from Lawrence's at Hampton, and Brown of Slough—and considerable interest was excited by the opportunities which were afforded for confirming the accuracy of Mr. Glenny's descriptions, and the mistaken notions of our northern friend, who, among other extraordinary novelties, discovered that Polyphemus was a foul flower and Albion a beauty, both happening, however, to be the same thing. Mr. Slater—who politely set out with a statement that would have been highly injurious from a respectable person—was proved to be wrong in every instance quoted in the *Gardener*; and by true specimens of all the flowers, the *Gardener* was proved to be right.

Mr. Lawrence's stand of twelve contained: Polyphemus, a splendid specimen of a Bizarre. Aglaia, fine clean Rose. Patty, a noble Byblomen. Fabius, a good specimen of a very uncertain Bizarre.

Holmes King, light delicate flamed Byblomen. Captain White, alias Sanzoe, and half a score more names, a clean Bizarre.

Madame Vestris, a heavy feathered and flamed Rose, in good condition.

Violet Imperial, delicate Byblomen.

Camuse, alias Brilliant, a good specimen of a good Rose.

Franciscus Primus, an old, clean, and favourite Byblomen.

Junius Brutus, a Bizarre of many names.

Catalani, a very delicate Rose.

These were, for the most part, very good, but not so fine in growth as Mr. Brown's, though highly creditable, and in fine condition.

Mr. Brown's stand consisted of—

Triumph Royal, Rose.

Brown's Wallace, same as Musidora, grand shaped but heavy Byblomen.

Polyphemus, a superb specimen, the finest we have seen this season.

Catalani Rose, finely feathered and flamed, much larger and heavier colour than Lawrence's.

Salvata Rosa, a very beautiful and fine shaped Byblomen.

Strong's King, a grand specimen, feathered and flamed, a very perfect flower in all its points, Bizarre.

Madame Vestris, heavy feather and flame, Rose.

Violet Rougeatre, very pretty Byblomen.

Brown's Ulysses, a seedling Bizarre, to be described hereafter.

Vorhalm, neither a Byblomen nor a Rose—between both, and would do for one as well, or, rather, as ill, as the other.

Franciscus Primus, an excellent specimen, Byblomen.

Romulus, or Carlo Dolci, a tricolor Bizarre.

The whole of these were far above an average growth. The Catalani, Polyphemus, Salvata, Rosa, and Strong's King, were probably as fine as any will be found in the country this season; but the stand was disqualified. The other Tulips, compared with these two stands, were unimportant. There appears to be very little advance in Heartsease: size seems the prevailing feature. There were but few seedlings, and these without novelty. Only one flower worth noticing, and that a very middling one. The Bianca branch of the Floricultural Society, of which Dr. Lindley is Vice-President, intend to praise it very much, therefore any such compliment from us would be useless. We shall notice it under the proper head. Among the many beautiful exhibitions which graced the rooms, we must mention the following:—

Elechrysium, Mr. Bruce, a handsome plant, blooming abundantly.

Erica Pregnans, by Mr. Dawson, healthy and handsome, and a second Erica, forming a noble match.

Hydrangea, by Mr. Doran, a first-rate specimen of skill in cultivation.

Water Lily, Mr. Cox, novel and beautiful.

Erica Depressa, Mr. Alnutt, the plant which has been so often to shows, that on the morning of exhibition the gardener missed it from the greenhouse, but afterwards found it had gone on to the show without him—it was exceedingly fine.

All of these were beautifully grown.

A collection of Cinerarias, by Mr. Ivory, of Peckham, displayed an endless variety of shades and colours. Calceolarias, by Mr. Massey, were as good as we have seen this season. The plants small and healthy, and the flowers in perfection. Mr. Catleugh's Geraniums were finely grown and comprised large specimens of Joan of Arc, Coronation, Silene, Sylph, Victory, Compté de Paris, Jubilee, Jewess, Lord Mayor, Lady Mayoress, Ovid, and Erec-tum. Mr. Catleugh also had a very pretty collection of roses in pots, cultivated after the plan laid down in this work. The collections of plants were magnificent; but, although there were Ericas of rare kinds in perfection, and stove plants in abundance, the star of the day was a specimen of *Azalia Gladstonii*, a superb, thick, round, large flower, of fine texture, pure white ground, and rosy scarlet stripes, splashes and blotches. It was in the collection of Mr. Bruce. Of fruit there was but little. Chapman, of Vauxhall, and Chapman, of Clapham, late of Vauxhall, exhibited grapes; the latter seems to grow them just as well at Clapham as he used when he was at home. Cuthill showed melons, as fine as most people show in June; and Mr. Martin and Mr. John Gaines had

pretty little exhibitions of vegetables for the season. Upon the whole, the show indicated advancement; the only drawback is the kind of persons employed as judges. It is impossible to create any thing like confidence while the interests of the science are placed in the hands of such persons as we saw judging the tulips. We have not a word to say against them as private men—but what shower would wilfully have his claims decided by Mr. Wildman? The committee may think lightly of all this, but we can assure them that the emptiness of the pretensions of the Bianca club to any thing like a knowledge of properties is becoming every day more apparent, and men will not show unless they can calculate on a sound decision. Imagine a judge, who praised himself to the skies when he was trusted to edit a newspaper, going in to decide upon the stands of flowers, and to overlook, until some one pointed it out to him, a rose tulip, with only five petals! However, he was right in the awards in every case *where there was no competition*. We believe now that this society may be, and, if careful, will be, the prop of floriculture—for the Floricultural Society has lost nearly every member that was of any use to it, and their first class flowers proved this year quite as bad as they were last.

GOOSEBERRIES.

GEORGE LINDLEY's catalogue, brought up to the close of 1829, comprises, of red, 66 varieties; of yellow, 42; green, 45; white, 47—200; with columns indicating the number of prizes which each sort won in the course of five years, from 1825 to 1829 inclusive; also a farther list of additional varieties, 522 in number—total, 722. It is by no means improbable that the heroes of Lancashire have subsequently doubled, or perhaps tripled, their achievements; and we leave them in the enjoyment of their rewards unenvied. Our present object is simple, and our view single-hearted in the extreme; we will not even trumpet forth the praises of the good, old, and high-flavoured rough red, rough green, and rough yellow; though we must acknowledge that a garden amply supplied with a number of well-cultivated bushes of these deserving favourites possesses wherewithal to compete with any rival for the honours of the dessert. "We happened," says a friend of ours, "two or three years ago, to possess five trees of moderate size, raised a few years since from cuttings, which were sent by the late Mr. Knight from Downton Castle, with an accompanying recommendation, thus expressed:—'I have sent some gooseberry cuttings of the best gooseberry existing, I believe, the *Pitmanston greengage*. This fruit is the subject we have chosen as our sole theme; it is named, and named only, at No. 550 of Lindley's catalogue, without any note of admiration

whatever; and for this sin of omission, we could almost find in our heart to wish that "The Guide" might fail to go into another edition.'

"The berry is quite free from hairs; it is not large, neither is it very small; the colour is, when ripe, of a dingy, greenish hue, mottled on one side with red, and assuming a shade of yellow; in fact, it resembles a small mellow greengage plum; and, if a gooseberry can be compared with a plum, the flavour of this berry may, in a considerable degree, be said to resemble that of the plum, whose title it borrows: this is our own opinion only, and tastes differ. The branches of the shrub are of erect growth, the prickles are few in number, single, and arranged in alternate order; hence it is one of the least offensive of its genus. We believe that it is propagated with great facility, and may be raised from cuttings placed in a shaded situation, as that under a north wall, at any period from mid August to the end of October. If a few roots can be induced to push before the cold weather set in, a season nearly will be gained. We earnestly recommend all our readers to lend their assistance to extend this choice and too rare variety. It possesses, however, two defects: if the weather become showery after being hot and sunny, the fruit is apt to crack and to fall from the tree, just at the critical period when it arrives at perfection, that is, when it becomes quite ripe, and is luscious in the extreme, without being in any degreeapid."

WEEKLY JOURNAL OF GARDENING.

TAKE cuttings from choice Heartease, and strike them under a hand-glass; take care that the sun does not reach them. The small shoots which spring from the bottom, pulled off when an inch, or an inch and a half long, will strike almost immediately.

Auriculas must have shade, air, and all the rain, but must be examined every week to see that the drainage is perfect; many persons report at this time half the stray plants of each sort, but we think them very apt to throw up autumn blooms when thus pushed.

American plants that have been forced, should be planted out in a peat bed to make their summer growth, the straggling branches being cut in first; and if the whole plant has become straggling and awkward, the best way is to cut it down all over into a compact form.

Greenhouse plants may now have the open air; take care to lay a good coat of ashes for them to stand on, or, what is as good, rough gravel pebbles, or pavement slates, or something of that kind, to prevent the worms getting into the pots, or, for very choice specimens, use Hunt's patent stands, described at page 296, vol. I. Let the situation be sheltered from

winds, and have them examined, and, such as may require it, watered daily.

It may be well before they make their summer growth to cut in all awkward branches, and give the slips a chance of striking

Give pot room to all that require it, by shifting them to pots a size or two larger, and be careful that the compost is well closed round the old ball.

Heaths, and plants of similar habit, must not have too much sun; they will be well in some place where they can have all the air, occasional rains, and good shade.

Dahlias to be bloomed in pots must be examined, and if the pots be full of tubers, or nearly full, they must be changed for those of a size larger.

DESCRIPTION OF SEEDLINGS.

BROWN'S ULYSSES TULIP.

A BIZARRE, inclined to feather, the ground colour something duller than Polyphemus, and not so pure, the feathering dark brown, but not without some of the breeder in it; general form like a goblet, but each petal being boat-shape, the bulges prevent its opening wider, the top edge close, three inner petals deeply indented, three outer ones not so; texture roughish on the inside, colours dull on the outside. The whole hugs too much, so as, when blown as open as it will, the cup is too deep, flower altogether greatly inferior to Polyphemus or Charbonier, but we think it probable that if there were less colour it would be darker feather; the principal faults were, the cup too deep, yellow not bright, curl over top, indented inner petals, feathering not dense nor bright, outside very dull, principal property closeness and cleanness, the size will average about the same as Polyphemus.

COOK'S DELIGHT HEARTSEASE.

Is a flower of general good form, round, and flat; the texture is bad, the dark petals being papery instead of velvety, colour not rich, the three bottom petals are the same ground colour, the two side ones want character, but we suspect the flower was not in condition, and will be seen better in that respect; the white ground is bad and has a greenish or yellowish tinge, which we think will not bleach; in the condition it was shown us at the Horns, Kennington, it would never be a great favourite, though we suspect, from what the owner informed us, the Bianca Club think well of it. As these flowers are shown now it will not be considered large enough, nor striking enough, and the only thing that would help it would be good growth, and more distinct colouring in the lower petals; nothing can make it of a good texture, and we fear nothing will make the white pure.



No. 1.

ORNAMENTAL BUILDINGS.

THERE is nothing which conduces so much to the beauty of a well laid out garden as appropriate ornamental buildings; and these should, on all occasions, be made useful if possible: small temples, of whatever form, are infinitely superior to obelisks or pedestals, or the like. At present the taste runs upon the Chinese style; and the sketches given with this paper are specimens of summer houses, which would look well in almost any situation where the foliage of the trees adjacent lends its aid. In almost all cases, at the extreme end of a walk, if there be such, there should be something of the kind as a finish, and here and there, in a belt or outer plantation of a shrubbery, there should be temples or ornamental seats for resting. The sketch which precedes this article, No. 1, is of

a complete Chinese summer-house, with an upper as well as lower apartment, and such as might be built cheaply by any ordinary carpenter. In all large grounds we have, without exception, found a lack of seats, so that a journey round was fatiguing and monotonous; and three or four such buildings as we suggest, placed at moderate distances, and in eligible situations, would be every thing. Care should be taken first to place them where they add grace and beauty to the estate, and in the next place where there is a pleasant look-out from them; but such as we have here given would actually do for a porter's lodge. The other, No. 2, is more of an alcove or arbour; but these will suggest almost an endless variety of Chinese and other fancy buildings.



No. 2.

THE FIRST CHAPTER ON MELON GROWING.

BY A PRACTICAL MAN.

THE following account of a successful mode of culture, by a gardener of Barnoak has already lead to a very general improvement in such places as afford the necessary facilities. The plan having been communicated in 1837 and acted upon. The cultivation of the melon has fallen into considerable disrepute of late years, owing in my opinion, to the extension of other departments of forcing, so that the melon ground has been comparatively neglected. This is to be regretted, inasmuch as the melon, when properly grown, is inferior to no fruit (at present in cultivation) in richness and delicacy of flavour, the pine apple excepted.

Being living at a place, some years ago, where it was found necessary to extend our accommodation for melons, and having at the same time, a few rather large specimens of tender plants for which we had not room, it was deemed advisable to have a frame constructed, so as to serve the double purpose of melon-frame in summer, and as a protection for the before-mentioned plants in winter. These being rather tall, the frame was made much deeper than those in common use, being four feet six inches deep behind, and when placed upon the bed presenting an angle of elevation between 34 and 35 degrees; it was 12½ feet in length, by six feet wide, and was put together by screw-bolts, which could be unscrewed, and the frame taken to pieces at any time when required; the bed was composed of alternate layers of tanner's bark and stable-yard dung, and was made what may be called a strong bed, being nearly five feet deep before the frame was put on. The frame being set on, the interior was filled with bark to the depth of about one foot; and after standing the usual time, to let off the rank steam of the first heat, the interior surface of the bed was covered all over with thin turf to within a foot of the sides of the frame, and the hills were raised within 12 or 14 inches of the glass. The frame was now ready for the reception of the plants. These were raised in a common seed-bed, in the usual way, which has been so often described by abler writers, that I deem it unnecessary to repeat it here. The plants being put in, they were earthed up as they advanced, until the whole surface of the bed was level (except a small space round the sides) with the tops of the hills; thus (after allowing for the subsiding of the materials of which the bed was formed) giving the plants a range of soil nearly three feet deep. The objects proposed to be gained in this particular were, the rendering it unnecessary for the roots to have recourse to the materials of which the bed was formed; and, at the same time, this great depth of soil was serviceable in rendering innoxious the powerful heat of the bed in the early part of the plant's growth. It may be

thought that this depth of soil is quite uncalled for, but I believe I shall be able to show the advantages of this over the common practice, where the soil is generally nearer one foot than three. As the plants advanced in growth they were watered twice or three times a week, according to circumstances; not so often when they began to show fruit, but after a sufficient crop of fruit was fairly set they were watered as before, until the fruit appeared full grown, when they were watered more sparingly. The bed did not require more than two linings until the first crop of fruit was cut. The first year of this practice this bed produced, at an average, eleven fruit to each light; all large and handsome shaped fruit, and ripened off to perfection, besides a few that could not be sent to the table, from being unshapely or prematurely ripened. After this crop was cut, by a little top-dressing and a fresh lining, the plants shot away afresh, and produced a number of middling-sized fruit; and, although far inferior in flavour to the first crop, yet, considering the season of the year, they were by no means despicable.

It may be very naturally supposed that the weight of such a body of mould would press so heavily upon the bed, that in a short time it would render it to compact for fermentation; this, however, is not the case. I confess, that a bed wholly composed of stable-yard dung would be unable to resist the pressure of such a weight, and that it would be impossible for such a bed to be stimulated afresh by linings; but a bed, the major part of which is tanner's bark, is different, that substance being of a firm texture, and lying pretty open, will resist the pressure sufficiently to admit of the bed being stimulated by linings, the bark at the same time retaining a steady and moderate heat much longer than a bed composed entirely of dung. To the composition and strength of the bed I attribute part of the success of the above plan; but to the nature of the soil, and the manner of applying it, I believe by far the greatest share of the success is due. The soil was taken from part of a meadow, which at one time had formed the bed of a river, but, from the river being turned into another channel, it was now completely dry in summer, although sometimes flooded in winter: it consisted of a reddish hazely loam, inclining, in the smallest degree, to clay, with a little admixture of sand, sufficiently large to render it quite friable when moderately dry: it was in fact, nothing more nor less than the depositions of the river, and it had never been turned up in the remembrance of man, neither had it been polluted by manure of any kind. This soil I have proved by experience to be of all others, within the sphere of my knowledge, the best adapted for growing the melon, and we have corroborative proof that it is so. We see that in the land of Egypt, which *never is, nor requires to be manured*, the melon is produced almost spontaneously in the greatest

perfection; and, in fact, in all the eastern countries that are liable to periodical inundation, the melon forms a staple production of the soil.

I have before hinted, that a rich soil is unfavourable to the melon; but it may be said, that the soils here alluded to are really rich, although no manure has ever been applied: it is useless to quibble about terms—that they are fertile we all know, but that they are rich, in the common acceptance of the term, I respectfully deny. That the fertile properties possessed by the depositions formed by the river during the period of inundation is not attributable to any enriching matter carried along by the flood, or anything in the nature of manure, but rather to the *chemical action of the water* upon the different *earths*, during the time they are held in suspense, and, perhaps, a good deal depends upon the process that goes on in depositing the matter that has been suspended. In order that my meaning may be fully understood, let us contemplate that the Nile and the Ganges have rolled their mighty waters over the same channel for countless ages, and allowing that the billy countries which they traverse before they reach the plain ever did contain this enriching matter (which is not the case) that renders the plain so fertile, it is evident that they must have been exhausted some thousands of years ago. All rivers that are liable to overflow their banks have their sources in mountainous countries, the numerous elevations in such districts serving as so many points of attraction to the clouds that are hovering in the air, which, after settling over the tops of the hills, at last descend in rain, so that the rill is swelled into a rivulet, and the rivulet into a torrent, and the torrent, by the time it escapes from its mountain fastnesses, becomes a mighty river, sweeping everything before it. But it is pretty evident, after having swept over the same ground for some thousands of years there will be very little left of an enriching nature to fertilize the champaign country. Further, were the flood-gates of the sources of such rivers now to be opened for the first time, the countries through which they would have to pass to the plain are only remarkable for their sterility, so that anything they might carry with them would be more pernicious than useful; it is said that it is owing to the richness of the slime brought along by the river and deposited upon the plains that the fertility of such plains arises; but here, I have shown that there is nothing to bring, or, if anything, it would be injurious. It may be observed, that all rivers have a continual motion from the centre of the stream towards the land, at the same time all bodies held in suspense by the water are deposited in a regular series of gradations over the bed of the river, according to their specific gravity; hence we see that large stones from the centre of mountain streams; smaller stones, gravel, and sand follow; and, lastly, the banks

are formed of *earths*; these are by no means deposited promiscuously—the more ponderous, or those parts that have not been thoroughly decomposed, are deposited first, the others follow according to their specific gravity. From these observations it appears that the water, during a flood, disturbs, and, by its continued rise, separates the finer from the grosser parts of the soil; the weighty or too stiff parts, on the flood beginning to abate, are deposited first, and are afterwards covered by the finer and more delicate matter which is most fit for supporting vegetation—I am, &c., VERITAS.

CHAPTER THE SECOND.

SIR,—IN addition to the unfavourable nature of the mould, the failure of the melon crops may be often traced to the formation of the bed and the construction of the frame. The general practice being to put up the bed wholly of stable-yard dung, covering the superior surface with the short dung that has dropped out in the process of making up; the frame is then put on, which, in the deepest part, is perhaps not more than two feet and a half; a little more dung is then put in, leaving not more than two feet clear between the surface of the bed and the glass, consequently, it is impossible to put more than one foot and a half of mould in the frame. Should the bed be in a proper state, and the plants healthy, their roots will ramify completely through this depth of soil in two or three weeks. Should they be judiciously supplied with water, they will not readily have recourse to the food here presented them; but, upon the least deficiency of moisture occurring, they will avail themselves of it rather than endanger the existence of the plant: this applies equally to pits and frames, the practice about many places being in both cases the same. Where the *no-water system* is adopted, it is evident the plants must have recourse to the dung, and I have before pointed out how inimical to fruitfulness such food must be, that it is so may be farther exemplified by what is going on around us every day in the common routine of gardening. It is a fact, known and acted upon, that plants in a very rich soil develop their structure more freely and largely before showing flower or fruit, than if they were in a clean agreeable soil, destitute of stimulating manure; the exceptions to this rule (if any) are so few that it would be a waste of time to say a word more upon the subject, as it must be familiar to every one that knows anything of vegetable economy. I cannot, however, help remarking here, that it is almost contemptible to consider the recommendations put forth by some theorists upon the subject of soils (and even by practical gardeners) eighth, sixteenth, and even twentieth parts of materials are to be huddled together in the most glorious confusion for the growth of one kind of plant. The melon is almost invariably recom-

mended to be well *dosed* with sheep, deer, or pigeon dung, sometimes all three—liquid manure, lime water, and so on. That plants may succeed indifferently well when so drugged (if I may be allowed the expression) can only be accounted for on the ground that the deleterious qualities of some of the mixtures are rendered nugatory by an opposite quality in others, and, in most cases, more than half are perfectly useless, and, for any good they do to the plants, they might as well be fifty miles distant. In the case of pigeon dung, there may be some allowance made, as it is known that that article has been used in the east with considerable advantage; but still it shows great want of reflection in those who advise its adoption in this country; the different mode of cultivation rendering it more likely to be hurtful than otherwise. Were the climate of this country fit for the cultivation of the melon in the open air, sheltered valleys, and the level country by the banks of rivers, would be the best adapted for that purpose, and when we consider that the melon is a plant of large structure, with roots proportionably large, spreading and penetrating to a great depth in the soil, it is obvious that the extremities of the roots, which are the feeders, might get so deep that a sufficiency of caloric might not reach them from the surface, so that they might get into a state of lethargy. Pigeon dung is the very best remedy that could be applied to prevent the evil consequences that might ensue were the roots to get into a state of torpor, not from any nourishment supplied the plant, by any means, but from its natural pungency and irritating qualities serving to keep up the tone, as it were, of those organs that are placed so deep as to be beyond the reach of the solar influence: but it is clear as noon day that the plant, elevated upon a hotbed, and supplied from time to time with fresh materials, in a fit state for generating caloric to the bottom of the soil, as well as the surface of the bed, would be more likely to sustain injury than to receive benefit from a highly acrid and pungent manure, pigeon dung, so highly valued in the east as a manure for the melon (whether its effects be rightly understood or not by the gardeners of Egypt and Palestine), just serves the same purpose as our bottom heat, which is supplied by hot dung, or other materials, in a state of fermentation.

When it is of consequence to have superior melons, it might be worth while to give the above plan a fair trial, particularly where bark can be got at a moderate expense: the great objects to be kept in view are depth of soil and a bed of sufficient strength to impart the proper degree of heat to such soil. Where a clean alluvial soil, such as I have before defined, cannot be got, I would recommend a good clean soil from meadow land if possible, and let it be applied fresh, without any admixture

whatever; there are, however, few gardeners that could not get a soil that has been laid under water one way or other; even the sides of ponds or lakes, that occupy more ground in winter than in summer, would be much better than soil that has never been irrigated. Greater depth might be given to the pit or frame in a temporary way, at little or no expense, and such a bed would be found to be much easier managed than the thinner ones in common use, requiring lining but seldom, and its effects in every respect being more permanent.

Barnoak, Nov. 9, 1838.

VERITAS.

CHAPTER THE THIRD.

HAVING already stated my views at considerable length in regard to water, a few words will suffice here. It would be advisable to give the mould plenty of water as it is put into the frame, as the young plants will not experience the bad effects of moisture so much as after they draw towards a state of fecundity. The mould should be well beaten down when the water is given; this will render it unnecessary to be so lavish of water after; and, by giving a fresh supply with discretion, the moisture already in the bed will be prevented from becoming *stale*. It is of great importance that the atmosphere of the bed be well rarefied, as the plants get into a fruitful state; from the opinion that watering or syringing over-head is beneficial, I totally dissent. The great art in the application of water is to give it at such times and in such quantities as the atmosphere of the bed will not be changed with moisture for any length of time, especially after the plants have begun to show fruit; the young fruit being very sensitive, should the least moisture lodge upon them for any length of time, it so clogs the pores and chills their delicate organs, that it is often the cause of their yellowing and dying off when in the act of setting.

The next important point to be considered is the *stopping*; it is not unfrequently recommended to stop the vines at that joint *immediately before* the fruit; this I hold to be unscientific as well as unnatural. A very limited knowledge of vegetable physiology teaches us that the sap in its primitive state is unfit for the enlargement of the plant or fruit; we are further taught, that the sap, after being carried into the leaves, there undergoes a process of elaboration, and is again returned in a fit state for the formation of the essential secretions of the body of the plant and fruit. Now, it is plain that the foliage in advance of the fruit must have a great share in keeping up the necessary supply of aliment for its enlargement. I do not mean here to assert that the fruit is not furnished with its own peculiar organs of elaboration; but even were these organs so constituted as to be able to appropriate a portion of the sap in its original state, it is obvious, that by stopping at one point

before the fruit, a cessation of action must take place in that portion of the vine between the fruit and the joint stopped; it is as obvious, that the fruit in its tender state is unfit to absorb all the sap that would have been necessary, had not the shoot been stopped. It follows, that the sap will exert itself at the joint next below the fruit, and thus leave that part of the shoot upon which it is placed in a state of torpidity for a time; at least the result of this is, that the tubes or sap vessels of the fruit collapse, and the fruit becomes dormant, and can never, by any means, be induced to renew its action. It may further be remarked, that every cultivator may observe, that after stopping a well-established healthy plant it will immediately push laterals, and in forming the first joint of these the embryo fruit and leaf-bud may be seen coming together; after these are farther advanced, the joint may be plainly seen, the fruit seated at the base of a leaf, and the vine pushing away past, perhaps to form another fruit at the next joint. Here the hand of nature may be recognised at once conducting everything in the most perfect manner for the attainment of the end in view. *The laws of nature are perfect*, and had it been necessary for the melon to have had the whole sap of the individual shoot which produced it, assuredly the fruit would have formed the termination of the shoot; but, seeing that this is not the case, we will find ourselves mistaken in supposing that we can make any improvement upon the laws of nature in stopping the shoot upon which the fruit has been formed; the organs of the fruit in their young and tender state require a small and regular supply of aliment, and that cannot be better accomplished than in the way that nature has provided; the progressing shoot carries the sap to and past the fruit, returning the requisite quantity of elaborated fluid, thus keeping up a regular supply, at the same time the *functional* operation of the leaves, anterior as well as posterior, to the fruit being of the utmost consequence in its formation. The plan most successfully adopted under my own observation is to turn the plants into the hills as soon as they are fully into the rough leaf, and, after they have made two joints, to stop them at the third; this generally gives three shoots, which are again stopped at the third, fourth, or fifth point, as the case may require, so that the frame may be regularly filled with vines; these produce laterals, showing fruit, which are never stopped until the fruit be past all danger, and a sufficiency of foliage formed above it to perform all the necessary functions; and they are only stopped then, when they are likely to extend farther than there is room to hold them. In the case of two fruit setting upon the same shoot, it may be found necessary to remove one. A man's own judgment will lead him to select the one most proper to be left.

I am aware that the view I have here taken of

the stopping of the melon has been recommended by some of our oldest writers upon horticulture, and I should not have entered so fully into the subject if I had not observed some of our moderns recommending the stopping at one joint above the fruit, a doctrine which I hold to be pernicious in its consequences:

The next point (and one of the very greatest importance) to be attended to is, that of airing. I have often been lead to consider this subject with no little anxiety, as my ideas are materially at variance with the common practice of airing as applied to framing; and, in fact, to almost all departments of forcing. It is a common practice, from the moment the melon plants are put into the frame, that the temperature shall be kept at that point which urges them to exert all their functions in the formation of wood and the production of fruit. Upon a shower of rain occurring, or the sky being overcast for a short time, the air is immediately taken off, that the glass may be kept exactly at the growing point. Now, I may be wrong, but I feel convinced that this is not in accordance with any recognised law of nature in relation to the vegetable or animal kingdom. I would ask, does the epicure, who keeps gorging himself from morning till night, enjoy that healthful energy experienced by him who, after a frugal meal, refrains from food until the organs of digestion (by relaxation and repose) renew their call for fresh aliment; or, does the vine, planted in a stove, which is kept throughout the year at that degree of heat which urges the vine to an exertion of its functions, continue healthy and fruitful if not turned out? *Certainly not*. Nor is there one exception to this rule, to my knowledge. All nature, both vegetable and animal, must have their intervals of relaxation, to continue in health and vigour. That the colds of night, and occasional storms with which we are visited, even in summer, act as so many checks of a salutary nature upon vegetation, we have no reason to doubt. Even the most healthy and hardy of our forest-trees are acted upon by these causes during the season of their growth, which, doubtless, are conducive to their health, independent of the more effectual cessation of all their vital energies. During winter, their most natural season of repose, how much more essential must it be to experience those natural checks, producing the required relaxation, whose period of existence is limited to one season only.

VERITAS.

CHAPTER THE FOURTH.

SIR,—I had once an opportunity of observing the evil of depriving plants of air, upon the least indication of a fall in the temperature, in a very striking case, having lived a considerable time at the establishment of a noble lord, not a thousand miles from the middle of the Carse of Gowrie, Perthshire, where the stock of pines was

good, and had good accommodation, but in the management of which there was nothing to boast of. This was the more vexatious, as everything else was rather above than below mediocrity, and very indifferent success, therefore, in the cultivation of the pine, as might naturally be expected, formed a continual theme of lamentation. The master (than whom a better *man* does not exist) could not see that there was anything wanting but attention to render his system of pine-growing as successful as he wished it to be. It was therefore the duty of him who had the air to attend to, to place himself in such a situation that he might have his eye upon Thetis and his team, to see that he steered clear of every cloud or speck in the firmament; or should his coursers have become restive, and plunged into a mass of vapour, so as to obscure the countenance of old *Sol*, then there was a race to the pine pits, and the air immediately taken off, until it pleased his majesty to emerge from his shroud. The results of this system were soon conspicuous; the succession plants, from being repeatedly stifled and suffocated in this manner, received such a check in their efforts at enlargement, that they prematurely showed flower, even before they had attained strength sufficient to carry a fruit two-pound weight. But the most interesting fact remains to be told (and that which first led me to consider the necessity of adopting a system of airing more consonant to the laws of nature):—the succession pit was hented by one fire, and the flue entered at one end of the pit; it was therefore necessary to keep rather a strong fire for some time after lighting, to raise the heat sufficiently at the opposite end. The house being rather old, the great heat at the end where the flue entered had considerable effect upon the brick and wood work, so that, even when the house was quite shut, air was admitted, perhaps rather too freely, at that part of the house. However, the effect was very evident: the strong heat during the night (when necessary to keep a fire) prevented every bad effect from cold, and the admission of air during the day, particularly at those times when the house was shut upon such emergencies as we have mentioned, was of the greatest benefit to the contiguous plants. When all the other plants in the house were showing fruit, these continued to grow rapidly without showing the least symptoms of starting, and attained a proper size, and produced very respectable fruit. It is almost unnecessary to add, that since observing the effects of the system here explained, when I have had an opportunity of putting in practice my own views, I have made it a rule to admit air gradually in the morning, and, except in extreme cases, to make no alteration till night, when the air is gradually reduced. This plan I have found, by experience, to be most satisfactory, and particularly so in the case of the melon.

It may be farther remarked here, that the

laws of nature are constituted in the finest harmony in relation to the vegetable world. Nature has bestowed a definite constitution upon every individual of the vegetable kingdom, whatever part of the globe they may inhabit; and the *alternations* of heat and cold, of moisture, and avidity of light and darkness, which may prevail in their respective localities, *à priori*, are calculated to operate beneficially in bringing them to maturity. From these premises I would infer, that *art* can only be legitimately applied as nature's handmaid, not when acting in opposition to an established law, as her assistant, not as her *imperious lord*. Hence it would appear, that in the cultivation of plants that require protection, an artificial temperature should be raised sufficiently high, that, upon a decrease of heat in the surrounding atmosphere, the plants might be allowed to participate in the change, without the chance of sustaining injury. In objection to this, it may be urged that the most of plants now in this country requiring artificial heat are natives of tropical regions, where they enjoy an eternal summer, and to allow the temperature in which they are grown here to fluctuate with the changes of the surrounding atmosphere, would be unnatural and prejudicial to the plant. But it ought to be borne in mind, that in tropical countries the rank chill dews of night are so intensely cold, that we can form but a faint idea of them here; and farther, the simoon and the tornado, the typhoon and the hurricane, the dry and the rainy seasons, are all so many means in the hand of nature for producing the *necessary checks* upon vegetation, and serve the same purposes of wind and rain, hail and snow, summer and winter, in these regions, placed so much more remote from that stupendous luminary, whose vivifying influence is the main spring of existence to every living creature, vegetable or animal.

Let us suppose a melon-frame supplied with the proper degree of heat, and, at the same time, a proper supply of air, and that the sun is shining in meridian splendour, but that a bank of clouds unexpectedly crosses his path, and are followed by other clouds in regular succession, so that a diminution of heat is the consequence, so much so, that the thermometer in the frame may fall below the desired point, the frame, in most instances, would be shut up, under such circumstances, and the so much dreaded evil would be infinitely increased by such a cause. When we reflect that plants use air as largely as animals, and that it is as essential to their existence, it follows that in a frame, in proper working trim, being deprived of the supply from the exterior atmosphere, must necessarily very soon exhaust the quantity contained in the frame at the moment of shutting up. When we further reflect, that with this limited quantity of air the stimulus of heat is still kept up, so that there must be a continual straining of every

individual function of the plant to perform its part, while the matter necessary for them to act upon is withdrawn.

By mature reflection, I say, upon the very unnatural case of plants so circumstanced we will be enabled to come to a just conclusion. I do not mean here to say, that it is positively necessary that plants should be exposed to every degree of heat or cold that may occur; but when we observe the benevolence that shines conspicuous in every law of nature, we will find it very difficult to form an artificial system that will equal the provisions that nature has made for the preservation and perpetuation of her own offspring. I am, however, of opinion, that there are few of our summer seasons so severe that a portion of air might not be beneficially supplied during the day, and the sashes undoubtedly ought to be *tilted* during the night. The simple fact that plants, during the night, inhale oxygen and give out carbon, and, during the day, *vice versa*, might convince us of the propriety of allowing the thermometer to fall to a reasonable extent during night, yet it is a very common practice to shut up the frames while they are yet so warm that they may stand at the same degree of heat all night at which they have been kept all day. Impartiality, however, obliges me to confess, that I have met with a *seeming* exception to the rule here laid down. I lately saw (and, I believe are now to be seen) in the gardens of the Marquis of Exeter, at Burleigh, pine apple plants which were put in in the month of June last, which are now, after several shifts, occupying large-sized No. 16 pots, and are not too well off for room. The leaves of many of them are nearly three feet in length, and they will average two feet nine inches in height. Should no accident happen to these plants, it may reasonably be expected, by the time they are *twelve months* old, they will be quite capable of producing fruit seven or eight pounds weight. I am bold to say that there are not in England pine apple plants, of the same age, their equal in size; and yet I am informed that the air is attended to with the most scrupulous nicety at the above establishment. This, however, does not shake my confidence in the soundness of the hypothesis which I have here endeavoured to explain; as I am convinced, were we thoroughly acquainted with the routine of management adopted in this case, the apparent anomaly would be cleared up.

In conclusion, I can only remark, that, after all that has been said, a great deal must depend upon a man's own judgment in cultivating our finer kind of fruits and flowers. I have, however, put to the test of practical experience the rules laid down in these papers in the cultivation of the melon, and I have found them more successful than any other that have come under my own observation.

VERITAS.

CULTURE OF GLOXINIAS.

I RECEIVED a small parcel of seeds from a distance; and these I scattered over the surface of a soil composed chiefly of sandy heath-mould from Bagshot, with about one-fourth part of half-decayed beech leaves, sifted. The soil was made quite level—then, over the seeds, a little more of it was sprinkled by the finger and thumb, rubbing it to the finest texture possible: the seeds were hardly covered to the thickness of a sixpence: the earth was then patted till quite even, and made a little moist by sprinkling water over it with a hair brush. The time was September: the pot was kept in a stove, the earth being regularly moistened by the mode described: the heat was often below 50, and all remained quiescent till early spring. Then, a host of little plants made their appearance, and as the temperature by fire and season improved, those grew; till at length it became needful to thin them out. It soon became evident that there was a great difference of colour and form in the leaf; some plants had the character of the old *Speciosa*, others were tinted with a chocolate brown, and in many the crenatures were dissimilar; the stems also were not all alike, and indeed every variation afforded evidence that gross impregnation had been effected by art or accident, between *Speciosa*, *Caulescens*, and *Maculata*. The flowers varied also—some were azure, others of a deep full purple; and some expanded to a very large size, being about 2½ inches long, and two inches across the widest part of the limb.

By adopting impregnation, I find that the white-flowered (*Candida*)—the anthers of which appear to be generally abortive—may be made to produce capsules that promise to contain abundance of seed. *Caulescens* also may be fertilized by *Speciosa*. The soil in which the tribe seems most to delight is a compost of sandy heath-mould, with one-third of writing sand (nearly pure silex), a light loam, a portion equal to that of the sand, and double that quantity of black leaf mould, or earth of decayed wood. An inch of drainage should be placed in each pot, and over that a thin layer of moss. One shift should be given in the growing season. The largest tuber will not require a pot above five or six inches wide at the rim. Plants may be kept perfectly green all winter, in the stove, at 55 degrees by fire,—the *Caulescens* particularly; and this also will bear cutting down, during summer, to one joint after the first crop of flowers has passed. During winter, the dormant plants must be kept quite dry, and protected from frost. Some will fail; and, therefore, a stock should always be maintained. At whatever period, between December and April, it be desirable to re-excite the plant, no shifting must be attempted till, by a heat of 60 degrees, a moist atmosphere, and the most cautious water-

ing of the soil, *growth commences*. I have seen twenty plants out of thirty destroyed by shaking off the old soil, and repotting while dormant. When the vegetation is established, a larger pot, a little new soil trickled round the ball, and worked along it with a smooth stick, and an entirely fresh surface-soil, half an inch deep, with increased watering, will do all that can be required to start the plants into vigorous activity. When in flower, water must be abundantly supplied; and a good plant, kept in a room, and not exposed to the mid-day sun, may thus be enabled to develop in the course of three months (May to July) a series of blossoms, of which from twelve to twenty shall be expanded at the same time, and every one extremely durable.

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SHADE Cucumbers and Melons from the hot sun, and there may be a few strong plants ridged out on beds of moderate heat, and covered with hand-glasses. Those which have been out some time may be permitted to run out their leading stems beyond the glass by propping the glasses up with bricks or small flower pots.

Sow some seed in the open air for pickling Cucumbers or Gherkins.

Transplant Celery, taking the strongest plants: a row planted out occasionally is better for a family than planting all out at once; care being taken that the strongest plants are used from time to time.

Complete all planting of the Dahlia, unless some are wanted for very late shows.

Shade Auriculas from extreme heat, or place them where they have not too much sun.

Ranunculuses showing colour must be shaded also. An hour or two's neglect, in the hottest part of the day, might burn the flowers and spoil them for show; but those which do not show colour, may have the sun, if watering be well attended to.

Carnations and Piccotees must have their sticks placed to them, and be tied carefully and rather loosely, that as the stems lengthen they may push up the tie, or grow through it. Attend to watering regularly, except when rain is abundant.

Hoe and thin out all such crops as Carrots, Turnips, Spinach, Parsnips, and Beet-root. Pull the strongest Lettuces from where they were sown, and plant them out in spare quarters. Earth up Beans and Peas that are well above ground. Stick all tall growing Peas and Scarlet Beans.

Tulips.—The covered beds may have all the weather, but must be weeded carefully, or a bed soon gets overrun, and the nourishment which should go to the bulbs is drawn away by the weeds. Those out of doors which, in an unfavourable season like this are in many places blighted, and the foliage brown or decaying, may be taken up.

June 3, 1843.

A DESCRIPTIVE LIST OF HEARTSEASES.

By a Correspondent.

PATRONISED as this flower is by, I may safely say, all of the floral societies in the kingdom, and therefore universally grown, it cannot choose but go on improving, but depend on it, beautiful as it is now produced, perfect as it may seem, yet, critically examined, it will be found wide, very wide of perfection. I admit that in some we have good form, *approaching* to a circle, in others beautiful colours. Substance of petal is less common, and distinctness of colour very rare indeed. Size is certainly attained, yet I cannot find a flower in which all these several properties are combined; with size, one generally gets a firmness of petal that requires a back board to support it; the colours in laced flowers are indistinct, for it rarely happens, but that the lacing colour runs into the ground or centre colour; this is vile, as it should follow the outer edge, and with as perfect a line, consequently be the same width throughout, and thus make an inner circle of the ground colour. I am quite certain that it would puzzle our growers to produce a flower in which the colour in the lower petal does not occasionally run up towards the centre, giving exactly the same appearance to the Heartsease, as the hare lip does to the "human face divine." Again, both the *lacing* and the *ground colour* in the three lower petals must correspond in colour—in this I am borne out by one who has from the first advocated it, one who has written, and written well on the subject, and "whose judgment cries in the lap of mine;" such a defect (for defect undoubtedly it is), gives a vulgarity of character to the flower, and condemns it as much as a green centre does the dahlia, a dirty bottom the tulip, or a run or self petal the carnation.

My object in this paper is if possible to class the flower, to place certain of the best varieties under a heading, and then, by pointing out the good and bad properties of each, show to what they ought, and what they certainly will be brought to. In speaking of each flower I will not do so from memory, but with the actual bloom before me. But first, a word or two on the eye, for the Heartsease deficient in this wants character, and, be its form or colour what it may, is now considered almost valueless.

About the same time (a few years ago) two flowers made their appearance, "Thompson's Victoria," and "Davis's Miss Belfield," each with very dark eyes, but of different character, the first having a dark splotch, terminating abruptly, the other deep, and distinctly pencilled, the rays extending almost to the lacing. From these two flowers appear to have sprung the only varieties now considered worthy a place in good collections. Occasionally will be seen a dark eye, surrounded by a dirty yellow, on a flower with a white ground: this is a great defect,

and must be weeded from a first class collection.

I will now separate the varieties, and under five headings, will go through those sorts most worthy of notice. Under the first division I will place those flowers in which the back petals are one colour, and the lower ones laced with the same. I shall not separate the yellow from the white grounds, or the heavy from the light laced, except in the description of each flower. I will begin with "*Coronation*," being the first of the *Victoria* family—not our *Prince's*, but "*Thompson's Victoria*,"—yet in some respects they may be said to bear comparison, each promises to be most bountiful to us, and if the one, the "*Flower of our Nation*," should receive that need of praise from her people that florists have justly given to *Thompson*, then must we feel pleasure when the bells again tell us of the production of another blessing at Buckingham Palace.

Coronation, "*Thompson's*."—A very rich purple, with deep lacing of the same, but of such various widths, that the white in the centre which should form an inner *circle*, is any shape but that, still the white is very pure; the eye dark, radiating almost to the lacing, and in the lower petal becomes confused with it; the notch of colour, or, what I shall hereafter designate as the *hair lip*, is here very palpable; the shape of the flower is too long, the lower lip curls, and the outer edges of the petals are somewhat notched.

Miss Stainforth, "*Thompson's*," is a sort of big brother of "*Coronation*," very similar in colour, but, if any thing, not quite so dark; the lacing is equally deep, more regular, but still ragged, running into the centre white, which is not always devoid of stains, for the eye, which is a decided splotch, seems to be impregnated also from the yellow in the centre—this I consider an imperfection, as is also the separation of the upper petals immediately above the centre, which cannot be in a perfectly round flower,—the three lower petals lay flat, but the back ones seem to want support, the flower, therefore, is seen to best advantage when in a stand.

Curion, "*Brown's*."—Here we have another of the same family, but a decided improvement in shape; indeed, I hardly know where to find better lower petals, they want no pressing, no weight in the shape of plate glass, to make them lie perfectly flat, but the back petals reflex. The colour is a dark blue, on a white ground, deeply laced, the lacing tolerably regular, and the hair lip not so palpable as in most varieties; the eye is fine, and distinctly pencilled; on the whole, it were impossible not to admit this to be a beautiful and first-class variety.

Triumph, "*Cook's*."—Another of the same school, but possessing a greater brilliancy of colour than either "*Coronation*," or "*Miss Stainforth*," created, I imagine, by a peculiarity

hardly to be met with in any other *Heartsease*, that of having two tints of the same colour in the lacing, the inner one being lighter than the outer. The white is pure, and the eye good, similar to "*Curion*:" the size is medium, and the shape rather oval than round.

Eclipse, "*Thompson's*."—The rich colours in this flower have made it a great favourite with the growers. The ground is deep yellow, approaching to orange; the lacing, a brown purple, which in the lower petal is somewhat brighter than in those above (a decided fault); the lacing is sometimes much broken, and seldom meets above the centre; the eye is a dark splotch, throwing its rays into the yellow ground. The flower is large, but rather long; it seems to improve as the season advances, and bears the heat of summer better than the *Heartsease* is generally found to do.

Corunna, "*Thompson's*."—Only a very few plants of this variety are yet in cultivation, the grower, I believe, having nearly lost his stock just as he had began to send it out last season. The eye is remarkably large, and may be said, like charity in ourselves, to cover a multitude of defects. The ground is yellow, but much paler, and less pure than in *Eclipse*; the back petals and lacing colour is difficult to describe, it approaches that ecclesiastic purple we so often see in scriptural subjects in the statue school of painting; it is occasionally broken, and does not continue to the meeting point in the upper petals; the hair lip is but slight, the size medium; the shape from the side petals being slightly separated above the centre, not first-rate, yet, from its very fine eye, and the rich purple lacing, it cannot but become a very general favourite.

Countess of Orkney, "*Brown's*."—I consider this "the mould of form;" but here is found that vulgar defect, the side and lower petals differing in colour, the side being white, the lower one a dirty yellow; this alone spoils otherwise a very beautiful variety; the petals are slightly laced with light purple; the eye is novelly pencilled and clouded, and will doubtless be improved on, yet I think it will never supercede the splotch of *Coronation*, or the deep pencilling of *Corunna*.

Prince Albert, "*Silverlock*."—The colours here are in every respect similar to *Eclipse*, but the lacing somewhat deeper, and much more broken, being hardly carried out to the extremity of either of the petals, and always terminating in specks, thus giving a dirty appearance to the ground colour; in the specimen before me the lacing in the two upper petals wants full an inch of meeting in the centre, producing very much the same appearance as do large whiskers worn by a bald-headed man. The shape is oblong—the size large.

Miss Nugent, "*Davis*."—A very fine-shaped flower, laced with a singularly rich mulberry

colour on a white ground, with good substance of petal equally distributed in upper and lower ones, a rare occurrence, yet the whole sadly injured from being without that characteristic feature, a good eye. Could the eye of "Cyclops," which I shall hereafter describe, be given to this, it would be "like a rich jewel in an Ethiop's ear," and raise Miss Nugent to the premiership—as it is, its shape and colour will carry it through another season or two, and then, for seed alone it must be considered valuable. It has another defect, which I had almost forgot to mention, and which is to be found in five out of six varieties, that of the colour running in hot weather.

Cyclops, "Thompson's."—This flower proves that we shall hereafter obtain every thing to be desired in the Heartsease—shape, distinctness and brilliancy of colour, with substance of petal; for, although I do not mean to say this is to be found in *Cyclops*, yet it approaches nearer to it than any thing I am conversant with. *Cyclops* is purple and yellow, the lacing not so heavy as an *Eclipse*, but nearly of the same width throughout, the inner edge of colour hardly breaking out of bounds; the eye is intensely dark, thus lighting up with increased brilliancy the delicate yellow ground; the outer edges of the petals are perfectly smooth; the form is a near approach to the circle; the size rather small.

Brilliant, "Cook's," is nearly the same colour, with one of the defects of *Eclipse*, but in a more glaring degree, viz., the lacing of the lower petals varying in colour from the side petals. It is heavy laced, and tolerably smooth; the size medium; and from the lower petals being rather small is deficient in shape; it is in every respect inferior to *Eclipse*, but an improvement on *Prince Albert*.

Bridesmaid, "Thompson."—I mention this flower more for its colour (a light blue) than for any good properties it possesses. We have the *Miss Stainforth*, *Coronation*, *Warrior*, and *Bridegroom* colour out of number, but a light blue flower like *Bridesmaid*, with the properties of either of the above, is yet wanting. *Bridesmaid* has crumpled petals, ragged edges, broken lacing, and would go as far to condemn a stand as any flower the "Hero of Iver" has sent out.

Bridegroom, "Major."—Here is a great improvement on *Coronation*—indeed, I think most of the good properties of *Miss Stainforth*, *Coronation*, and several other similar flowers I could name, are thrown into this variety. I have not seen it yet produced as large as *Miss Stainforth*, but the ground colour is more pure; the eye is free from stain, and does not confuse itself with the lacing, as we have seen that it does in "Coronation," nor does the lower petal curl as in that flower. Were the colours as distinct as "Cyclops," and the shape through-

out as good as the lower petals of *Curion*, we should then have a *Ne Plus Ultra* indeed.

I now come to the second heading, under which I will place the various selfs, and singular to say, I cannot find a good yellow to describe; for notwithstanding the many that for a time have had a place in the florists' collections, at the present time, I think not one remains that will pass muster. When I speak of yellows, I mean the deep rich colour found in *Eclipse*, not the poor washy straw colour which I shall hereafter have occasion to speak of when describing "*Sulphuria Elegans*." Blues are also as scarce in selfs, as are light blues in the laced flowers, yet I have seen one blue self displaying all the colour to be seen in that beautiful mineral, cobalt, yet, unfortunately, of such a shape that there seems little hope of making it useful. I believe it was raised by a gentleman in the north, and I do hope that the same stock that produced it him may give others of an improved form; it would be a boon that every florist would delight in.

Mulberry Superb, "Cook."—It might as well have been called *Strawberry superb*, for the resemblance it has to the colour of the mulberry; but I suppose the grower found as great difficulty in giving a colour to his bantling as I shall have in describing it. I have under the head of "Corunna," manufactured a colour, and called it "Ecclesiastic purple;" now the back petals of *Corunna* and *Mulberry Superb* are a perfect match, so much so, that I would defy *Hitchcock* and *Rogers*, of our Row, to discover a shade of difference. Well then, the colour is admitted to be beautiful, and it shades off towards the centre, to throw out as it were, a fine bold, black, splotchy eye. The size of the flower is large, the shape very good, but a substance of petal is wanting, but even with this want, "*Mulberry Superb*" yet stands the best self of any colour. "Cook" has sent out another which he calls

Black Bess.—Here again must I rate him for a misnomer, I have heard of some people whose optics are so strangely formed, that they cannot distinguish yellow from light blue, or scarlet from green, and I think friend Cook must be troubled with a vision of this sort, or he would not call a tolerable dark purple a black; why the eye in the very flower itself at once convicts him, but I have said more already about "Black Bess" than she deserves, for crumpled as she is, whoever possesses her and wants her to be seen, must write up as we sometimes see in the back slums, "An Ironer Wanted."

Sulphuria Elegans, "King's."—I have before made a slight allusion to this flower; I think I called it a "washy straw colour," I was perhaps rather hard on it, so I will leave out the "washy" and let it stand straw colour, and a very good colour it is in its way, but I should like the

flower much better if the stains of yellow in the lower petal could be taken out, at present it is partly coloured yellow and straw. The flower has a remarkably fine black eye, and the shape but for a notch usually found in the lower petals, would be good.

Maid of the Mill, "Brown's."—(Not yet out), is by far the best white self I have seen, it is very pure in colour, and at this early season does not appear at all dependent on the sun for blanching; it has a large blue eye, which but slightly throws its rays into the ground colour, it is a good size, the outline is free from notch of any kind, and the shape very desirable.

Conservative, "unknown," *Blue*.—This is a very large, but rather a square-looking flower on the plant, but when in a stand dressed for exhibition is far from being a bad shape; the back petals are somewhat darker than the three lower ones which gives it the appearance of a run-flower; its principal attraction is its eye, which is of great size, radiating almost to the extreme edge of the lower petal. I have only classed this for want of a better of a similar character.

Under the third head, I class those flowers the back petals being dark, the lower ones *white* or *yellow*, without spot or lacing. This variety cannot bear comparison with laced flowers, yet I think one of this description brilliant in colour, with a fine eye, is very valuable in a stand of blooms. As there is a great sameness in this class and which numbers but few, I shall therefore only mention two or three varieties, selecting from the best.

Jehu, "Brown."—Although this flower in the early spring has occasionally a few splotches in the lower petals, yet as the season advances they disappear, and the flower then takes its stand under this heading. The back petals are a very rich purple, the lower ones deep yellow; the eye very large and darkly pencilled, the flower is also very large and good shape. I have placed it first in description, and I think it stands in that position in its class.

Boaster, "Bragg."—Whether the name of this flower is intended as a sort of allusion to the raiser's name, I know not, but I think it must be, for in my list I find two others bearing the same cultivator's name, the one *Puff*, the other *Braggadocia*, so it appears he is desirous of sending his name down to posterity in more ways than one; but as this is no business of mine, I must apologise for the digression, and return to describe "*Boaster*." The purple in the back petals is somewhat darker than in "*Jehu*," with the richness of velvet, the yellow is very dark and clear, perfectly free from stains; the eye is a splotch, with slight rays, the side petals are rather small, which causes a deficiency in the shape, the size is only medium.

North Star, "Bragg's."—The eye may certainly somewhat resemble a *Star*, but *Full Moon* would have been a better name for this very round flower. The back petals are purple, the eye of the same colour, very large and very beautiful; the ground colour is intended to be white which a hot sun may make it; but without the assistance of Apollo the "*North Star*" cannot *brag* much of purity.

The fourth class is similar to the last, with this almost new and important difference, the back petals instead of being one entire colour, are edged with a lighter one approaching to the yellow or white, the ground of the lower ones. Rogers' "*Masterpiece*," was, I believe, the first of this beautiful variety, which has now only extended itself to four or five other flowers, I mean such as deserve to be brought into such good company as this.

Crasus, "Brown's."—Is an improvement on "*Masterpiece*," so well known to florists; it has the same rich yellow in the lower petals, the brown bronze in the upper, with the singular and striking colour (a sort of mixture of yellow and bronze) lacing the upper edges; the eye is lightly pencilled; the shape is good in early spring, but lengthens as the hot season approaches.

Princess Royal, "Kings."—Is as delicate as we can imagine our Queen's first-born to be. The upper petals are very light lilac, an uncommon colour in the Heartsease laced with white, the lower petals are white, free from stain; the eye is a splotch, brown in lower petal, blue in side ones, the shape is good, but there is a great deficiency of substance throughout.

Cowper, "Thompson's."—The back petals purple, slightly edged with yellow, being the colour of the lower petals, on the bottom one is an occasional spot, in this state it is valueless, when without it it becomes a very pretty variety; the eye is fine and the shape good, as is the substance of the petals.

Desirable, "Thompson's."—The back petals purple laced with white, which was intended to have been the colour of the lower ones, and would be, could the yellow in the eye be kept within bounds, as it is it runs into the lower petals, causing that vulgar defect before alluded to, and which alone would have prevented me naming it, but owing to the few flowers I could place under this class I was induced to smuggle it in.

Under the fifth and last class of all, I will place those flowers in which the whole of the five petals are of one colour, and the edges only laced with a darker colour. These edges are seldom found to extend beyond the two upper petals, but there were a few "*byegones*," such as Carpenter's "*Princess*," and Davis's "*Queen of Trumps*," that were laced throughout, but I have now for some time lost sight of them, so conclude they are gone out of cultivation,

a misfortune their shape was very likely to produce.

Venus, "Thompson."—As all the beauty of woman was said to have been concentrated in Venus, so is all the delicacy of colouring and symmetry of form in the Heartsease thrown into this well named flower. The edges of the upper petals are delicately laced with bright violet; the eye is magnificent, blazing out of a white as pure as it is possible to be. Thompson may well be proud of this flower, it is I believe, the last he has sent out, and if he does not attempt to push a worse one forward, and continues still obliging his friends and himself, we may expect some good things ere long.

Cupid, "Thompson."—Whether this be the son of Venus I know not, but it certainly bears a great family likeness; the colours are nearly the same, the shape not quite so *en bon point* which being interpreted means round, and the eye although good is a little deficient in brilliancy.

Delicata, "Thompson."—This is very similar to the two above described, but wanting several of their good properties. The bright violet of Venus is changed into a dull light lilac, the white in the lower petal is stained, with the yellow from the centre, and the eye is disfigured from the same cause; in shape it is also deficient and the flower when compared with either of the others is flimsy.

I now have brought this pleasing task to a conclusion. I have given a full, true, and particular account to the best of my judgment of each of the several flowers I have selected for my remarks. I have "nothing extenuated or set down aught in malice," what I have written has been without fear or favour to any man.

D.

[It is to be perfectly understood that we admit these description without prejudice, we are by no means bound for the correctness of the opinions there expressed, we have inserted them because the writer seems to have taken some pains and shown some taste, but we should not be inclined to accord such excellent characters to some of them ourselves, no more than we should the following, which are sent by another correspondent, we think we could find as good omitted from both lists as any that are in them.] ED.

FURTHER LIST BY ANOTHER CORRESPONDENT.

Alba Maculata (May's). White upper petals flaked, and spotted with deep purple, strong pencilled eye, great size and substance.

Goldsmith (May's). Deep bright yellow, fine pencilled eye, lower petal occasionally deficient, but when perfect a first-rate show flower.

Haidee (May's). Clear white inside, upper petals bright purple, lower margined with same,

dark pencilled eye, large size and substance; a very distinct variety.

Imogene (May's). Light yellow, fine pencilled eye, large size, constant show flower.

Laura Superba (May's). Clear white, the upper petals margined with deep purple, fine dark pencilled eye, large size and substance.

Peter Dick (May's). Bright yellow inside, upper petals deep purple, lower petals edged with same, strong pencilled eye, large size and substance.

Queen of the Whites (May's). Clear white, strong deep blue pencilled eye, large size and substance; a very distinct variety.

Regulator (May's). Clear white inside, upper petals deep purple; lower petals deep distinct; margin of same colour, strong pencilled eye, great size and substance.

Sophia (May's). White inside, upper petals bright blue purple, lower petals tipped with same, strong pencilled eye, large size and substance.

Souter Johnny (May's). Yellow inside, upper petals deep mulberry purple, lower petals bright crimson purple, fine pencilled eye, large size; a very distinct variety.

Van Amburgh (May's). Clear white inside upper petals bright purple, lower petals edged with same, strong pencilled eye, large size and substance.

Yellow Defiance (May's). Deep bright yellow, strong pencilled eye, great size and substance; very distinct.

Adrastia (May's). Upper petals deep bright purple, lower petals edged with same, strong radiated eye, very large size and substance.

Annette (May's). Upper petals bright bluish purple, lower petals edged with same, clear white inside, strong pencilled eye, extra size and substance.

Blue Bonnet (May's). Bright blue upper petals, lower petals edged with same, clear white inside, deep blue pencilled eye, extra size, shape, and substance.

Mrs. James (James's). Fine clear white, occasionally splashed with deep purple, strong blue pencilled eye, good size and substance.

Mrs. May (May's). Very deep purple upper petals, lower petals distinctly edged with same inside, clear white strong pencilled eye, extra shape and substance.

Mulberry Perfection (May's). Very bright deep mulberry, yellow inside, fine pencilled eye, size and shape extra.

Ovid (May's). Light yellow, strong pencilled eye, very large size, firm, substance superior to J. May's *Imogene*, which has proved a good show variety.



THE PROPERTIES OF THE DAHLIA DISPUTED.

SIR,—Having fancied that Mr. Wildman was the person who laid down the properties of the Dahlia in the first instance, from hearing him read about the flower a long time at the Floricultural Society's Meeting, I have been silly enough to refer people to his paper as a guide for their conduct in the cultivation, the judging, and exhibiting that flower, but I have since seen the GARDENER AND PRACTICAL FLORIST, and learn from that work that Mr. Glenný was the author of every thing worth listening to in that paper, and that even the properties are only the same as those laid down by Mr. Glenný, described in a more clumsy way, and as the stupid man himself has since admitted, elaborated much more. However, I wish now to inform you, that at a society where I attended only once, and which I learn is since divided, some going to a low pot-house, and others resolving to be respectable, or dissolve, an apothecary in the neighbourhood disputed Mr. Glenný's judgment; he maintained that a Dahlia had no right to be any portion of a circle, that an elliptic would be just as good, that all flowers were inclined to be flat on the face, and that it was monstrous any man should take upon himself to dictate a series of properties which no one could attain, let them do as they would. I disputed the point with them as well as I could, but I found my antagonist had raised a Dahlia which Mr. Glenný, in pursuance of the properties he had laid down, condemned in the early part of your first volume, and that six or eight of the lowest men I ever met, agreed in the expression of their dissent from such judgment. I do not think either of the parties sufficiently important to be worth either contradicting or convincing, but I do think as we have had every point of Mr. Glenný's alleged properties to constitute perfection, perfect in

different flowers, it must be very obvious that it is possible to get them some day combined in one, and at all events it is fair to say, that a flower to be perfection must have them all. I have seen Holmes's Exquisite and Ansell's Unique as perfectly formed to two-thirds of a ball as if they had been modelled, and the effect was such as to make all the rest of the stand look poor; although I confess, they were as compared with others, coarse; and I am not quite sure that the black Dahlia called Essex Triumph is not much such another form: since writing to you, I have learned that my antagonist and his half dozen dependents have determined to form a new Society, under the old name, and to set up his own Dahlia as a model.

Your's,

A MEMBER OF THE LATE SURREY
FLORISTS' SOCIETY.

[We do not feel bound to enter the lists against any body who chooses to dispute the correctness of the properties laid down; they were, it is true laid down by Mr. Glenný, but they were submitted to very large meetings of Florists for their approval, and unanimously approved. With regard to the form of Unique we can confirm that by the above portrait of a bloom of it, in which, however coarse and imperfect in other respects, nothing can be nearer than it is to the two-thirds of a ball. We have no other concern with the subject of the condemnation, than merely to affirm, that if it be the trumpety flower called Pet Rival, it did not want Mr. Glenný's judgment to condemn that, though it did require some assurance to show it for a prize. It will be seen that for richness and effect, there is no other form so good as the portrait exhibits.]

THE RIVAL SHOWS,

CHISWICK AND REGENT'S PARK.

THE grand Spring shows of the Horticultural Society and of the Royal Botanical Society, have passed off without any thing very remarkable, excepting that the exhibition at Chiswick has been more remarkable for profit than fame; and, that in the Royal Botanic Gardens has been more productive of fame than profit. The Horticultural Society, pluming itself upon its influence over the employers, has not been very studious of the interests of the gardeners; and by withholding some of the prizes, it has reduced the value of the rewards at the show to something like £250, whilst the Royal Botanic Society awarded something like £500, for there was no shuffling. Those who had exhibited at the Chiswick Gardens greatly increased the quantity, and time had improved the quality of their productions for the Park, and many who did not show at all at the former, exhibited splendidly at the latter; where the tents, the arrangements, the gentlemanly treatment of exhibitors, and the general management, gave great satisfaction to all the parties concerned; whereas, at the former, there was what the gardeners universally considered a very degrading notice stuck up in all parts of the ground, treating them like any thing, rather than persons who had produced the Show, and the gardeners severely felt the uncalled-for, and, as they deemed it, offensive measure; nor was the pass tickets, which are necessarily given them to enable them to re-enter the gardens, less offensive, in consequence of a similar notice. The Botanic Society had provided their tents of adequate size to hold twice the number of persons that could be crammed into those at Chiswick. There was ample room for ten thousand visitors in the grounds, which are beautiful though they are not yet finished; the arrangements for the plants under their natural orders is most ingenious; the rock work is displayed in curious artificial passes through a mountain, in arches, pillars, and artificial strata, showing through the side of hills, and broken fragments at the foot. A lake of dimensions suited to the general scenery, with a handsome rural-looking bridge across an arm of it, adds wonderfully to the beauty of the place, which will shortly assume the appearance of a splendid landscape garden. The boundaries are for the most part hidden with trees or mounds, and the young plantations are looking well. The plants were arranged in four large tents, one of great length being entirely filled with Geraniums; one with Heaths; one with Calceolarias, Heartseases, Tulips, and Cinerarias, very many of them seedlings, and the largest tent was occupied entirely with collections of stove and greenhouse plants, Orchidaceous plants, Ferns, Melo-cacti, and specimen plants. There were, however, in-

teresting collections of British plants, some of which were erroneously named, and there has certainly never been seen, since the celebrated shows at Lord's Cricket Ground and Cremorne House, so large a collection of rare plants together; indeed, at this distance of time, we should be inclined to say that they did not equal it, except that one was remarkable for the most roses, and the other for the most orchidaceous plants in flower, ever seen together; and in these particular points the shows in question never will be excelled—though that is saying a good deal. But the taste in the arrangement of the American garden, the bulb garden, the agricultural departments, the British plant garden, and the numerous fancy scenes which abound—so unlike the formal monotony of the grounds at Chiswick,—add charms to an exhibition which may be sought in vain elsewhere. On the other hand, the Chiswick Show is an established concern; females, no matter their rank, are used to the crowding peculiar to the place, and go, well knowing that they have to force through a mob of rude gentlemen to see the flowers; and those who have no objection to force through a mob of rude gentlemen of course go and see them; ladies who are more particular promenade in the grounds, and do not attempt to force through the narrow pens which seem to have been constructed on purpose to make a crowd, and which, if not made on purpose, answer the purpose as well as if they were.

The conservatory at Chiswick, dressed out for the occasion with a great number of plants in pots, many of which were plunged in the ground to fill up vacancies where the originals had died off, looked full of vegetation, but void of all arrangement, most of the plants selected for it are almost worthless, and the majority are subjects that would grow any where; nevertheless, it would be hard indeed, if, among the numbers required to fill such a place there were not some flourishing, accordingly we see some of the rank-growing creepers inclined to take possession of the whole house; many plants are drawn into uncouth ugly shapes, and growing too vigorously for any thing. But of all the miserable objects that ever presented themselves, commend us to the experimental ground for agricultural purposes, where the nostrums and poisons recommended in the *Gardeners' Chronicle* are tried: what with the Guano and disinfected manure, Ammonia from the gas works, and the other filthy things recommended in the *Gardeners' Chronicle* and tried here, the place might be called the Plant Hospital. We heard a story there which is too good to be lost: a vast number of experiments had been ordered to be tried by the great power there, and a great man came round to look at the effects of the nostrums that were to perform miracles: the poor wheat looked in a decline, all the dif-

ferent kinds of physic seemed to have the same effect, all so far looked miserably sick: at length coming to a row which looked strong and healthy, the great creature stopped to observe what physic had been applied, and when the man informed him in a titting tone, that it was growing in the natural ground, away walked the great man, rather savage that the poor plants which had been subjected to his treatment were doing as ill as plants could do, and that the only row growing in the natural ground was healthy and strong as it ought to be. The Horticultural Society's concerns, however, are about to undergo a revision. There is too much labour employed to be employed well, and by way of employing it somehow, the place is formed into a large nursery concern and seed farm, a parcel of idle fellows are kept half their time at work which children could do, such as doing up thousands of packets of seeds, and propagating thousands of common plants, which are to supply a class of persons who ought to buy at nurseries or seed shops. The Horticultural Society was never intended for this, and we are heartily glad that the Botanic Society does nothing of the kind, and that when it does distribute, it will distribute rarities only. Among other novelties exhibited at the Botanic Gardens on the day of show, was a model of the proposed winter garden or conservatory to cover an area of three hundred feet by two hundred, or 60,000 square feet, the plan is very simple, the ventilation very complete, and the design is pretty; there is nothing elaborate in the elevation, it is in the strict sense of the word "neat not gaudy," there is rather an elegant dome for the centre of the front, and the structure will be very superior to the hog-backed concern at Chiswick. The collection of fossil wood and other geological remains, almost forms a museum of itself, and it will be admitted by all who visit the grounds, that all which has been done has been done well. We cannot help thinking that it is almost, if not quite a reproach to London that there should be such lukewarmness in the support of an undertaking that literally doubles the value of all the houses in the neighbourhood, and affords one of the first promenades in England, and, that too, within a few minutes drive of the very smoke of the city. However, most public concerns rest first on individual perseverance; there is no lack of supporters when they are not wanted. In looking at these rival candidates in the Floral world impartially, we can see clearly, that under any circumstances, the Royal Botanic Society would stand at least even with their more established rivals, but seeing that exhibitors all round London are upon an equality, that the prizes are more than double at each show, that there is no shuffling in the way of withholding prizes, that the gardeners are treated properly and that there are pains

taken to do justice, these shows will far excel in splendour any thing that has been done at the Horticultural Society's Gardens at Chiswick, and they want only fine weather to outshine them as much in company as in plants.

CULTURE OF THE HYACINTH IN FRANCE.

THE Hyacinth requires a light, mild, sandy, but substantial soil. It is easy to form one perfectly suitable to it, by taking a third of fine river-sand, a third of virgin earth, and a third of manure or leaves, well decomposed, and mixing them well together. In this composition, Hyacinths may be cultivated in the open air, or in glass vessels or pots, as an ornament to a sitting-room. Real admirers of this plan bestow on it the same care as on tulips. They prepare the beds eight or ten inches above the level of the walks, and the borders are edged with green turf. In these beds the bulbs are planted in fives, like the spots on a five of clubs; or in lines, with due attention paid to the proper arrangement and harmony of the colours. The putting down the bulbs takes place from the end of September to the 15th of October. They are placed about five or six inches deep, in light and warm soils, and something less in moister ground. The plantation is covered over with about two inches of manure, well prepared: if frosts are apprehended, the beds must be covered with leaves, or dry litter, untainted by urine, which is highly detrimental to the roots. In spring-time this covering is removed; the space between the plants is dug up with great precaution; and a couple of inches of fresh earth is spread over the whole, to give an air of neatness to the bed.

Towards the month of April the blow comes on, and care is taken to prolong this period of beauty, by preserving the plants from the sun and rain, by means of canvas coverings erected above, which are to be removed when the weather allows it. When the blow is at an end, all the flowers are cut off, excepting those intended for seed. It is not the single plants alone that furnish seeds, but the demi-double, and even some of the doubles; and these latter are now most preferred, as the taste for double flowers has become confirmed. Flowers which are exceedingly double give no seed. The time of gathering the seed is when they are black, and ready to escape from the divided ovaries. They must be sown the following autumn.

When the leaves are dry and yellow, the bulbs are taken up, and placed carefully by, covered with a layer of sand, perfectly dry, and about two inches deep. They are allowed to dry in this position for about a fortnight: they are then placed on shelves in some dry and airy place; and when they are perfectly dry, they are cleaned, the suckers are separated, and they are stowed in their own places in the drawers prepared for

their reception. The suckers are more or less strong, and are cultivated in the same manner as the bulbs obtained from seed: they do not bear flowers until the fourth or fifth year. Sometimes the suckers which are too much confined in their scales fail, and produce the loss of the bulb. In order to prevent this, some horticulturists, before planting the bulbs, make an incision all round, which penetrates only so far as to prevent any injury to the centre. This operation facilitates the formation of the suckers and increases the number.

If you desire to multiply by seed you must sow in September. The crop is covered over with about two inches of well-prepared earth, and during the winter a thick layer of litter or dry leaves is placed over, as it has been already stated; or, if you like it better, you can place over the root a glassed frame, with mats spread over it during the cold: this latter method is preferable. If the seed is sown in earthen pans you must put them, during the winter, in your conservatory. In spring the covers are taken off with precaution, and the air is admitted as freely as possible, care being taken to guard the crop from the late frosts, which would inevitably kill them. The crop is treated as tulips are. The bulbs are transplanted each year, more space being given to them as they grow old, and great care being paid to them during the cold of winter. At the fourth year some flowers appear, but it is only at the fifth that the bulb is at its full force. This is the age that the Dutch dealers send out their Hyacinths, which appear in all their brilliancy to the admiring eyes of amateurs at the moment of their first blow—a brilliancy which but too often does not appear the year following, either because the climate exercises an unfavourable influence over them, or, which is more likely, because the cultivation which is bestowed on them is not what they exactly require. The new plants, which promise well, are called Conquests until they are definitively named.

When Hyacinths are cultivated in pots, the same earth is used as I mentioned a little above. They are left out as long as the temperature is mild, and when the cold sets in they are taken in and placed as near the light as possible. They blow sooner or later, according to the heat of the room. The bulb, which has blown in this way, being taken from the earth and preserved in a dry place, can be replanted in the following autumn. The plants should be occasionally watered. A little salt is thrown in the water of the vessels over which the bulbs are placed, in order to prevent its becoming foul, and also to stimulate the vegetation. These vessels should always be kept as close as possible to the light, in order to prevent the Hyacinths becoming streaked, and to see when to renew the water as it is absorbed. After the blow of the bulbs they may be replanted in a good position, in

dry earth, to cause them to ripen. They must for a fortnight be kept from the sun; they become strong and blow again at a second planting.—*M. Doverege.*

TRAINING THE VINE.

My trees were planted in the autumn of 1830; shoots within six inches of the ground were led off horizontally, and gradually these were laid on the ground, and sent roots into it. From the horizontals a series of perpendicular branches were trained to the roof. For the first three or four years these were too numerous and crowded; and as the laterals from them were treated as spurs, the whole formed a thicket. Subsequently (1835) a new system was adopted, and this has been pursued to the present time. Fresh young shoots were selected from the bottom, close to the horizontal branches, and these were led up perpendicularly, but at the distance of three feet, shoot from shoot. At the autumn pruning (which I always make as soon as the fruit is off), every old rod was cut away, and thus the entire wood of four varieties was renewed. This preparation of new shoots, and the cutting away of all those of the previous year, are practised yearly, the consequence is, that new and vigorous wood brings and carries to perfection a large quantity of good and handsome clusters. The spaces between the bearing rods provide for the free admission of light and air, and permit the advance of the new preparatory rods. The fruit-bearing laterals are always stopped at one clear joint above the upper cluster of two (for I allow no more in each bearer;) and the young secondary shoots are stopped at one leaf, as they develop themselves to the length of three joints—the laterals and claspers, likewise, of the new rods for the following year are taken off. Thus the power of the tree does all that vigour can effect, and I never yet have failed.

One remark more. Grapes on the wall seldom shrivel: in the house they are apt to do so. I suggested last year that a cause may be traced in our too close stopping, by means of which a heavy crop has frequently an inadequate breadth of foliage retained for its support. I stopped my house vines at two and three joints above the upper cluster, and I think I see advantage in the practice; assuredly, the foliage has retained its verdure more consistently, and thus more shade has been afforded to the fruit.

A FEW WORDS FOR THE ROOKS.

No insect is more destructive to the hopes of the farmer than the grub of the cockchafer beetle, *melolontha vulgaris*, which is known under a variety of names in different districts, as the brown tree beetle, the May-bug, the brown clock, &c. The eggs of this insect are white, and laid on the ground, where they soon

appear a soft whitish grub, with a red head, and about an inch and a half long; in this state it continues about four years, during which time it commits most destructive ravages on the roots not only of grass, but of all other plants and young trees. After this grub has lived its due time under the turf, it issues forth in its winged state from the ground, and commences to devour the leaves of all kinds of trees, but more particularly those of the oak. And it is to prey upon these winged beetles that the young rooks and their parents assemble in such large flocks in June and July in our oak woods. Those fields also which are infested by this grub attract these birds, with several companions, such as the jay, the magpie, and the jackdaw, to feed upon it. For nearly three months in the spring almost the sole employment of the rooks and the above-named birds is to search for insects of this sort, and the destruction they cause among them is beyond all calculation.

The grub of a small beetle, called the wire-worm, *elator segetis*, derives its name from its slender form and uncommon hardness. It lives in the grub state nearly five years, during which time it devours the roots of wheat, rye, oats, and every variety of grass, which it attacks indiscriminately, and causes yearly a great loss of produce. It abounds chiefly in newly broken up land, and is particularly destructive in gardens recently converted from pasture land. The wire-worm is a favourite food of the rooks, and of all the birds of the crow family.

The grub of the Crane fly, *tipula oleracea*, is known under different names, its long legs having always marked its appellation. This grub is most destructive to the roots of grass and grain. In many parts of England it cuts off a large proportion of the wheat crops, especially when sown after clover. Reaumur tells us, that in France, in meadow lands the grass of whole districts has been destroyed by it, so much so as not to produce the food necessary for the sustenance of cattle. The rooks are great devourers of these grubs.

Several species of slugs are met with in Great Britain, all of which subsist on leaves, roots, and vegetables. The most common slug is *limax agrestis*, of which there are several varieties; injurious to the gardener and agriculturist. They devour the young shoots of turnips, wheat, and all other kinds of grain, often to a most ruinous extent. These slugs are a favourite food of the rook.

THE GARDENER'S NOTE-BOOK.

SEA GRAPE.—M. Arago having expressed a desire for further information respecting the place whence the floating banks of sea weed, seen off the Azores, originally came, M. Bonnett communicates his observations, all of which tend to the opinion that this weed, which is called the

Sea Grape, and is supposed to have been brought by a current from the Bahamas, grows in the place where it is found. He says, that when becalmed, and the water has been clear, he has seen detached pieces rise from the bottom in a fresh condition, which may be easily distinguished from those which have been some time on the surface: and M. Bonnett is convinced, that with proper materials, the bottom of this part of the ocean might be reached. This gentleman states that in one of his voyages, when in 23° 26' north latitude, and 44° west longitude, the water became muddy, and formed a turbid line north-east and south-west, which was half-a-mile broad.

DURABILITY OF OAK.—The throne of Edward the Confessor is 800 years old; one of the oaken coronation chairs has been in its present situation in Westminster Abbey about 540 years; and the oldest wooden bridge of which we have an account is of oak; it is that famous for its defence by Horatius Cocles, and existed at Rome 500 years before Christ.

ADVANTAGE OF PLANTING FRUIT-TREES ON DECLIVITIES.—Dodart first observed that trees pushed their branches in a direction parallel to the surface of the earth. If a tree stands on a steep it pushes both towards the hill, and towards the declivity; but on both sides it still preserves its branches parallel to the surface. As there is an attraction between the upper surface of leaves and light; I am also persuaded, though not equally certain of it from experiment, that there is an attraction of the same nature between the under surface of leaves and the surface of the earth. This I consider the true cause of the phenomenon:—I had long observed that the most fruitful orchards, and most fertile trees, are those planted on a declivity, and the steeper it is, though not quite a precipice, the more fertile they prove. It is well known that the spreading of trees always renders them fruitful. On a plain they incline to shoot upwards; and therefore art is employed by skilful gardeners, and applied in various ways to check their perpendicular, and to promote their lateral growth. But this point is obtained on a declivity by nature. There a tree loses its tendency to shoot upwards, and in order to preserve its branches parallel with the surface, is constrained to put them in a lateral direction. Hence an important rule in the choice of orchards and fruit-gardens.—*Rev. D. J. Walker.*

GARDENS AT THE CAPE OF GOOD HOPE.—It may naturally be supposed, that, in a country abounding with the most beautiful flowers and plants, the gardens of the inhabitants contain a great number of the choicest productions; but such is the perverse nature of man's judgment, that whatever is distant, scarce, and difficult to be obtained, is always preferred to that which is within his reach, and is abundant, or may be procured with ease, however beautiful it may be.

The common garden flowers of Europe are here highly valued: and those who wished to show me their taste in horticulture, felt a pride in exhibiting hollyhocks, carnations, balsamines, tulips, and hyacinths; while they viewed all the elegant productions of their own hills as mere weeds. In none of the gardens are any of the beautiful tribe of heaths ever seen under cultivation; and it is a curious fact, that, among the colonists, these have not even a name, but when spoken of, are indiscriminately called *bosjes* (bushes). Although the Dutch language has a word to express heath, yet, whenever I made use of it in conversation with the farmers, it seemed always to be unintelligible.—*W. J. Burchell's Travels in Southern Africa.*

RESURRECTION OF PLANTS.—Palingenesis, or the resurrection of plants, was known to Digby, Kircher, Schot, Gafferel, Vallemont, and others. These philosophers performed the experiment of Palingenesis after the following manner:—They took a plant, bruised it, burnt it, collected its ashes, and in the process of calcination extracted from it a salt. This salt they then put into a glass phial, and mixed with it some peculiar substance, which these chemists have not disclosed. When the compound was formed it was pulverulent, and possessed a bluish colour. The powder was next submitted to a gentle heat, when its particles being instantly put into motion, there then gradually arose, as from the midst of the ashes, a stem, leaves, and flowers, or, in other words, an apparition of the plants which had been submitted to combustion. But as soon as the heat was taken away, the form of the plant which had been thus sublimed was precipitated to the bottom of the vessel. Heat was then re-applied, and the vegetable phoenix was resuscitated; it was withdrawn, and the form once more became latent among the ashes. This notable experiment was said to have been performed before the Royal Society of England, and it satisfactorily proved to this learned body that the presence of heat gave a sort of life to the vegetable apparition, and that the absence of caloric caused its death. The rationale of this famous experiment made on the ashes of the rose was attempted by Kircher. He supposed that even the substantial form of every known substance resided in its salt. This salt was concealed in the ashes of the rose. Heat put it in motion, the particles of salt were quickly sublimed, and being moved about in the phial like a vortex, at length arranged themselves in the same general form they had possessed from nature. Other particles were subject to a similar law, by a disposing affinity, resumed their proper position in the stalk, the leaves, or the flowers; and thus, at length, the entire apparition of a plant was generated.—*Hibbert's Philosophy of Apparitions.*

THE CARICA PAPAYA, or PAPAW-TREE.—A small quantity of the juice of this plant rubbed

upon meat, greatly intenerates it, without injuring its quality,—a singular fact, of which the West Indian housewife has long availed herself, although it has been so little attended to in this country, as not even to be hinted at in Professor Martyn's edition of Miller's Dictionary. Three or four plants of different sizes and ages, so as to be ready to succeed each other, might have a place in every large stove; and if beef and mutton may be made to resemble veal and lamb, and old poultry be rendered as tender as chicken, the space occupied by the papaws would certainly not be ill employed. The late Dr. Holder has given an account of this effect of the juice of the papaw in the third volume of the Wernerian Memoirs.

LICHENS.—Many lichens which fix themselves on calcareous rocks, such as the *Patellaria immersa*, are observed in process of time to sink deeper and deeper beneath the surface of the rock, as if they had some mode of penetrating into its substance, analogous to that which many marine worms are known to possess. The agent appears in both instances to be an acid, which here is probably the oxalic, acting upon the carbonate of lime, and producing the gradual excavation of the rock. This view is confirmed by the observation that the same species of lichen when attached to rocks which are not calcareous, remains always at the surface, and does not penetrate below it.

A method has been discovered in Sweden of preventing grain from being laid by the rain, and of raising it when laid. The corn stalks are gently bent together, and tied in bundles as far as the arms can reach, care being taken not to break the straws, nor to prevent the circulation of the juice. The bundle is fastened with a straw rope at about two-thirds the height of the straw, and the heads of the grain thus form a sort of umbrella, protecting the straw from the rain, and giving sufficient air. A man, or even an active boy, can bind in a day as much corn as will produce 100 bushels of grain.

ON TRAINING PEAR TREES.

Read by Mr. T. Moore, at the Regent's Park Garden Association for Mutual Instruction.

"TRAINING" is like many other of the operations of gardening, purely an artificial process; its avowed object is by an artificial distribution and retention of the branches of a tree, to counteract any tendency to exuberance, which an highly-stimulating soil might be the means of producing, and to induce, by this means, a more than ordinary degree of fruitfulness.

Various are the modes in which this operation is performed, as well as the modifications, which different practitioners adopt; but my object is not at present to enter specifically into an explanation of these differences; but rather to confine myself to a consideration of one of these

methods, which I hold in high estimation. I must also explain before proceeding further, that it is not to the training of wall trees that I am at the present time about to direct your attention, neither to a system which I am prepared to say is fully applicable to fruit trees generally; but it is to the consideration of a mode of regulating the branches of a favourite tree, the *Pear*.

The *Pear* tree naturally attains to a size, which excludes it in its perfectly natural condition from all well-arranged gardens; and, consequently, it is only the commoner kinds, which are planted in orchards, which assume their free and natural form of growth. Were there no other reasons which would induce the gardener to modify this luxuriant magnitude, the manner in which such trees would overshadow his valuable and often very limited space of ground, would be a sufficient argument to justify him in doing so; but there are other advantages which are also found to result, besides that of laying open his vegetable quarters to the influence of sun and air, and these are, increased fruitfulness, economy, and lastly, though not least, an infinitely more orderly and methodical appearance—a circumstance, it may be remarked, of no mean importance to the enjoyment of a garden, and without which, the most enchanting spot, with natural capabilities of the highest order, would be comparatively repulsive and disgusting.

The manner in which a gardener has the means of effecting the modification of which I have been speaking, is by having recourse to the operations of pruning and training—operations which are mutually dependent on each other. My business at the present time is, however, more particularly to consider the latter, of which, one of the oldest, and formerly most common methods in use, was that which is termed *espalier* training; this, like all the other methods, has both its advantages and its disadvantages; on the one hand, it has the advantages of presenting a neat and orderly appearance when the trees are young, and the operation is neatly performed, and of being adapted to different kinds of fruit in particular situations; on the other hand, it has the disadvantages of forming too impervious a boundary to the quarters of a kitchen garden, and, thereby of screening too much from the eye of the proprietor or his visitors, as though they were objects of disgust rather than of interest, those vegetable productions, the culture of which forms one of the principal requirements of the gardening profession, and also of giving rise to a system of slovenly management amongst culinary productions by thus partially hiding them from view.

Espalier training is attended with various degrees of success as regards the productiveness of the trees; in some soils and situations is

successfully adopted, whilst in others it is almost invariably marked by sterility; though, probably, these results originate in the unsuitableness of the soil, and admit of being averted by a judicious renewal of that element. In general, it is best adapted to trees planted on a light and shallow, but fertile soil, where their growth is moderate, and becomes well matured; and it is less adapted to those which are planted on deep and rich moist soils, where luxuriant growth is a necessary result. Wherever it is adopted, the line of rail should range north and south, so as to admit of the greatest equality of temperature on both sides of the trees, which would not result if they were ranged east and west; in the latter case, one side would be exposed to the sun all the day and the other entirely shaded.

In planting espalier trees regard should be paid to the ultimate extension which each plant will attain, so that the branches of one tree may not interfere with the branches of another; in order to arrange this satisfactorily some knowledge of the natural habits of the varieties planted is necessary; as a general rule, from twenty to twenty-four feet may be regarded as a proper distance for planting on ordinary soils.

Training *en quenouille* is another method which is adopted in some cases, and is much used in France, and in the south of Europe; it consists in training an upright leading shoot, and continually spurring in all the lateral branches, so as ultimately to fashion the tree into a sharp-pointed conical figure. This does not seem to be a very advantageous mode of training in this country, although, by the strong recommendations it bears, it is doubtless a successful method in the warmer climates, where it appears to have originated.

Besides these, there are various modifications of the *pendulous*, or umbrella training; one of these consists simply in tying downwards the points of the shoots of such trees, as may have been trained *en quenouille*; this is an objectionable method, inasmuch as that the uppermost shoots are constantly extending over and shading those below them.

The most perfect form of *pendulous* training with which I am acquainted, and that to which I would especially direct your attention, consists in obtaining a series of branches from the top of a stock, about seven feet in height, and by a careful course of training, to cause them to assume the desired outline; in this case, there being but one series, or circle of branches, they are more fully exposed to the action of light, and of the atmosphere, and the fruit are consequently brought to greater perfection. This peculiar method has many advantages to recommend it to notice; it induces a state of productiveness on the well-known principle, that the use of any means by which the elaborated fluid of a tree may be accumulated, and stored

up within its system, is favourable to the production of fruit buds, rather than of mere foliaceous ones. The means used in the course under consideration, to furnish this result, is that of bending the branches downwards, and thus by causing a pressure on the vessels of transmission at the parts which are bent, and thereby prevent the rapid flowing of the sap, a greater portion of elaborated sap, with its saccharine matter becomes, or is supposed to be deposited, during its very gradual motion; this increased amount of richer food, being thus stored up in the system of the plant, and available as food for the young buds, these latter, though originally existing as an embryo bundle of leaves, which under ordinary circumstances would have been developed as branches, are enabled by this supply of richer food, to assume a more perfect form, and to *advance* towards that consummate perfection, which is the end and aim of all vegetable development. To render this more plain, we will turn a moment to consider the origin and nature of a bud: a bud then, viewing it individually, is a centre of vegetable life, a living axis, from which the development of branches primarily, and of flowers and fruit ultimately, is originated; these buds, which in trees such as our present subject are very numerous, are produced by natural impulses in the trees on which they are borne, and most probably that impulse consists in an innate principle of extension, which enables plants, to use the words of the venerable Göthe, "to develop themselves continually from within themselves;" buds, thus formed and originated, are supposed to remain latent in the system of the plant, until called into action by the force of exciting, and we may add, favourable causes; hence we may account for the rapid and vigorous development of the terminal bud of a shoot, and those situate near it, because, in that position, they are more abundantly supplied with those elements of vital action, which are ever active within the plant.

There does not appear to be any different process by which those buds which expand in the form of blossoms are produced; but we have rather positive evidence to prove that fruit buds, and leaf buds, as they are respectively termed, have a precisely similar origin, and are in fact identical, in their embryo state, and until acted on by the respective, though mysterious impulses, which give rise to their development, either as branches, or in the *more perfected form of flowers and fruit*. In support of this opinion, I must adduce one instance, and I will content myself with one, because I think it is so conclusive, and it is also very intimately connected with my present subject; every one must have noticed, that pear trees produce abundantly near the bases of former shoots little pointed buds, which, in many instances, develop only a single pair of leaves the first season;

these grow, and perform their functions, and having contributed to the nourishment of the parent that gave them birth, they fall and decay; the season following, they are each succeeded by a whorl of several leaves, surrounding the rudiments of a more perfectly formed bud; these buds most generally in the next season unfold themselves as small branches, but instead of elongating, as ordinary branches would do, these do not evince any disposition to elongate; their extension becomes arrested by a mysterious internal action, and they are eventually surmounted terminally by blossoms, which are followed by fruit. Here then, the change, from a leaf bud to a blossom bud, is very gradual but very apparent, and it is difficult to conceive a more convincing proof of the identity of flower and leaf buds, in the embryo state; in the first place we have a small bud with two leaves, the vital action of these leaves deposits an increased supply of food, which gives rise to and sustains a more perfect series of similar organs the following season, whose action again supply food, by the assistance of which the bud is enabled to develop itself in its *most perfect state, bearing the organs of reproduction*. Now, if the first bud had been deprived of these leaves all past experience would teach us to believe that a very different result would have ensued; if the tree were weakly the bud would have remained latent until new matter had been supplied from the roots; but if it were in a vigorous state, an effort to fulfil its original design would have been made, and owing to the unelaborated food, with which only it would be supplied, that effort would have resulted in the production of a small branch, which would not have borne and perfected blossom buds, until the action of the leaves had provided food suitable to bring them to maturity. It is true that some varieties occasionally, and others frequently, form fruit buds towards the extremity of the annual wood, and this at first sight may appear rather conflicting with the above opinion, but a little examination will soon convince us that it is in reality a strong proof in its favour; for these buds are not evident as fructiferous ones, until the shoot has perfected a considerable number of leaves, and even then, only towards the extremity, where the force of vital action is always strongest.

What the exact nature of those impulses are, which are necessary to this *perfection of development*, what the exact nature of the food which is required, and why such food seems necessary to this result, are points which are veiled in mystery; though, as the results which attend the use of those means which are found to induce fruitfulness, are known to be a considerable accumulation of saccharine matter, it is most probable, that it is the richness of this accumulated food, which occasions the more perfect nature of the development.

That vitality in plants is maintained by the flow of sap, just as the vital spark of human existence is dependent on the healthful current flowing through the veins, does not admit of doubt; and as by this means, which we may term *ordinary*, vegetable extension is maintained, so the change from *ordinary* to *complete development*, appears to me to result from the change from this *ordinary food* to the abundantly deposited supply of *richer, and more highly elaborated food*, by means of which the plants are mysteriously imbued with a greater portion of that unknown vital principle, which is necessary to the development of the organs of their re-production.

We may, moreover, regard it as a wise ordination of Providence that such cannot be the case with all the buds produced by a tree, since some are acted on by the impetuous force of the ascending sap, and forced into development in the form of leafy branches; by this means the individual extension of the parent plant is secured, and the elaboration and preparation of a new supply of food provided for, capable of bringing to maturity and perfect development another race of floriferous buds.

That some flowers are borne on annual and some on perennial branches, some terminal, and some axillary, does not appear to interfere with this theory; for these may be regarded as mere constitutional differences, not at all subverting the opinion I have expressed.

But, to return, the pendulous method of training is further advantageous, as being more economical, both as regards the management of the trees, and also the occupation of the ground. A diametrical extension of about ten feet being abundantly sufficient for each tree, it allows of their being planted within fifteen feet of each other, and thus gives a great advantage over that obtained by espalier training; it is true, that a portion of ground unoccupied by the latter method would be taken up by the former; (I refer to the border left between the trees and the walk), but as no other crop ought to be taken from any border in which the roots of fruit trees are allotted to feed, it would be unfair to take the probable produce of such a border into any calculation: thus, for example, if a row of espalier trees are planted at a distance of four feet from the walk, no crop which involves the digging of the ground, can be planted on that space without risking the health of the trees, by destroying their surface roots; a row of pendulous trees, if planted at a similar distance would therefore only overhang the ground they could very justifiably lay claim to; whilst the abundant produce would compensate for any appearance of encroachment, which might arise in the fancy of narrow-minded persons.

Again, it possesses equal advantages with other modes in securing a neat and symetrical appearance, which is of no small importance when

it can be secured; it admits, too, of the possibility of inspecting the culinary crop without inconvenience, and thus one inducement to slovenliness and untidiness is done away with, and the pleasure of inspecting a flourishing assemblage of useful objects is easily provided for.

Of disadvantages, I know of but one which can be charged against the method I am advocating, and this is the excessive evaporation arising from the horizontal plane on which the upper surface of the tree is trained; this exposure is unfavourable to the production of flower buds in that position, and seems, in conjunction with other causes, to be rather favourable to the production of branches; the loss of fruit in this position, is however, a matter of slight importance, as a very abundant and sufficient crop is usually produced on the pendant branches; besides this, the production of young wood at the top of the tree provides readily for the furnishing of young and vigorous branches, to supply any vacancies that may occur, either by accident, disease, or decay.

As regards the pruning of such trees, I think it best done principally in the early part of the summer, with the thumb and finger, removing entirely all shoots as do not appear to be required to furnish the tree with bearing wood, and retaining such as appear desirable either to supply the place of any branches which it may become necessary to remove, or to furnish a new series of healthy wood; the shoots retained ought to be bent down as soon as they become solidified, as by this means their fruitfulness is augmented and forwarded by the vital action which has been already noticed.

But there are other principles which it is necessary to keep in view, and these are to avoid a too much crowded state of the young branches, as well as a too rigorous retention and confinement of them in their decumbent position; the effect of neglecting the former of these points, would be that of weakening and impairing the constitution of the trees, with the almost certain assurance of ultimately lessening their productiveness; the neglect of the latter would probably induce a plethoric, and consequently diseased, and therefore unpromising development.

WEEKLY JOURNAL OF GARDENING.

PEAS.—Sow, and at these late sowings we must use the early kinds again, such as Charltons, the early frame, double blossom frame, early May, Groom's dwarf, &c.

Beans.—Sow the broad for late crop, kidney beans, and also scarlet runner.

Turnips, carrots, and broccoli may be sown.

Potatoes.—Earth up in dry weather, stir the earth well between the rows, and clear all kinds of crops of weeds.

Transplant cape broccoli, savoys, winter broccoli, Brussels sprouts, and slips of all kinds of herbs.

Cauliflowers, Lettuces, and all fast growing vegetables, should be occasionally refreshed with water, and when this is done, let it be done effectually—that is, let the ground be saturated with moisture. It is from the inefficient manner in which watering is generally performed, that makes the difference between that and a shower of rain when one spot only is watered.

Carnations.—Water them as often as they require it; if the sun shines warmly the pots soon get hot and dry, and the fibres of the roots which have reached the side soon suffer.

Bulbous roots of all hardy kinds bloomed in pots may be turned out into the open ground to ripen, and remain in the ground until the leaves have dried down, when they may be taken up, and put away in a dry place.

Plants in flower must be tied up to sticks if they require it. The borders and clumps must be kept clean and neat.

Look over Greenhouse Plants. — Prune away rambling shoots from large specimens. Examine the pots, and shift all that require it into larger sizes; water all that require it daily; turn all out as fast as they have done flowering, or before, if you do not want their blooms. Keep them well together, that those who water them may not miss any. Protect them from the wind, and prop or fasten up such as might otherwise be blown down. Admit plenty of air to those still kept in the houses.

Greenhouse Plants should be always placed in classes, that the watering and other necessary attendance may be the more easily managed. For instance, all hard wooded Botany Bay plants, and those of similar habit should be together. Camellias should also be together. Where plants of different habits are indiscriminately mixed for the sake of appearance, it is easy to overlook some important specimen, and perhaps lose it.

June 10, 1843.

LAND versus WATER.

It may well be doubted, if we put any faith in the records of ancient or modern history, whether a naturally fertile soil is essential to the progress of agriculture. The more difficulties man has to encounter, the better he seems to succeed; and in overcoming natural obstacles his energies and intelligence are called into action with more than ordinary force. The vast prairies of North America are not the field where the emigrant adventurer exercises his labour and skill; it is in the dense forest that the axe precedes the plough, and man literally cuts his way to fertility and wealth. Nearly the whole of England was once studded with wood, excepting our wolds and downs. Julius Cæsar mentions a wood which extended nearly parallel to

the old Roman road, called Watling Street by our chroniclers, so wide and long, that it cost him some sixteen or seventeen days to march round it. In his commentaries he also informs us that what are now the finest provinces of Germany and France were in his time covered by the then impenetrable Hercynian forest, which overshadowed the whole length and breadth of the land, from the borders of Alsatia and Switzerland to the extremity of Hungary and Transylvania. "It was," says the dictatorial conqueror, "sixty days' journey in length, and nine in breadth," which, according to the day's march of a Roman legion *impeditus*—that is, with baggage and armour—would make the Hercynian forest nearly a thousand miles long. And this immense tract has been recovered, and reduced to a state of fertility hardly known in other parts of Europe, and is perhaps the best exemplification which the whole world affords of the farmer triumphing where the warrior has failed. The Low countries are an instance to the contrary, though an equally strong proof of what man can do in his command over nature; for naturally they are one great swamp, but the engineer has assisted the agriculturist to convert them into as dry and healthy a district as even France herself can boast of. The same thing has been done in our own country. Half a century ago the Fens of Lincolnshire well deserved the name. A few days of rainy weather covered them with a sheet of water; but now a steam engine here and there keeps the land as dry as a bone, leaving no more moisture than, under the provincialism of sock, is indispensable to the process of germination. The recovery of land from the sea is a task still more difficult, but one, nevertheless, which a people, who possess none of the mechanical knowledge or scientific attainments for which Europeans are justly celebrated, have achieved to an extent which Europeans themselves can hardly credit. Every school-boy reads and talks of the great wall of China; but there is a work in China, accomplished by manual labour, infinitely more wonderful. Montesquieu describes it with such an union of poetry and philosophy, that any language of our own would do it very inadequate justice. "The ancient Emperors of China," he says, "were not mere conquerors. The first thing they did to aggrandize themselves gave the highest proof of their wisdom. They raised from beneath the waters—that is, they recovered from the sea two of the finest provinces of that large empire. These provinces owe their existence to the labour of man; and it is to their inexpressible fertility that Europeans are indebted for their ideas of the felicity of this vast country." This was done centuries ago by a race of men proverbially ignorant and idle; and yet we have at least five millions of acres positively uncultivated in a kingdom possessing the hardiest and cleverest peasantry, the most abun-

dant capital, and the greatest agricultural and mechanical skill in the world. Why should this be the case? Some of the very best land in the country is almost unoccupied—affording merely a run for a few sheep, a plantation for gorse, or a warren for rabbits. “*O! fortunati Agricole sua si bona norint*” was Virgil’s exclamation eighteen centuries ago, but may well be applied to many a landlord of the present generation. If they want wealth, it is before them; a grateful, but neglected soil is close under their noses. Let them ask the Earl of Bristol, Mr. Chaplin, Lord Gwydir, Mr. Heneage, Mr. Handley, and twenty other landlords we could name, what can be done with a rabbit warren or heath. We are nearly tempted to think at times that the soil of England, like that of Sicily and Sardinia, is almost too good. Of one thing we are quite certain—that millions of acres of the very best quality are uncultivated, from the mere dread of the expense of fencing, manuring, and, in a few localities, of draining. In Poland, Prussia, and Pomerania, the threatened rivals of the English farmer, every rood of waste ground, such as the English landowners possess, would be quickly turned to account.

WATER—ITS USES TO PLANTS.

From a Paper read before the Regent’s Park Gardeners’ Association for Mutual Instruction.

IN the present paper, (which I have carefully collected from our best authors, combined with my own experience) it has been my object to present to you a simple and intelligible view of the principles of water. Should it meet with your approbation, awaken in any individual a taste for the application of chemistry as an assistant of horticulture, throw the least spark of light upon the subject, or cause a debate in our Society, which might be the origin of a more enlightening paper on chemistry, the principal object of my labour will have been obtained.

Water was at one period believed to be a simple element in nature; but this supposition has given way before the examination of chemists. Water is now known to be composed of oxygen with hydrogen gas, in the relative proportions of eight of oxygen to one of hydrogen. Into these substances it can be resolved by the action of electricity, or fire, but at such a cost as to render the process unsuitable for economic purposes. Pure water in chemistry is called an oxide of hydrogen. It may be formed by exploding a mixture of oxygen and hydrogen in a tube by the energy of electricity. Sea water contains 1,000 parts, about forty-six of foreign matters, chiefly chloride of sodium. Its specific gravity is 1,027. Mineral waters, in a similar manner, contain several foreign bodies; as, for example, carbonated waters, which contain carbonic acid, sul-

phureous waters, which hold sulphurated hydrogen, and chalybeate waters, which contain sulphate or carbonate of iron. Water may be impure, either by the chemical union of these or other foreign bodies, or by mechanical mixture of substances; the latter may generally be removed by filtration; but when the union is chemical, distillation and other processes are requisite to produce a pure liquid. In nature, water is never altogether pure; when it contains chemical compound of lime it is said to be hard, and in this condition it decomposes the soap which we employ with it.

As a liquid, water consists of exceedingly small particles or atoms of matter in mechanical combination; the exact nature and form of these atoms composing water are not, however, satisfactorily known in consequence of their exceeding smallness; but they may be compared to very small particles of sand, cohering slightly, and easily slipping or sliding over each other.

Whatever may be the nature and form of these exquisitely fine atoms, it is certain that they can adhere firmly together, so as to assume the form of a solid, as in the case of ice, and be made to separate from each other, and disperse through the thinner fluid of the atmosphere, in the form of steam, clouds or mist. This imperfect cohesion of atoms or particles is a property common to all fluids. The atoms composing water, being in closer union than those of air, are observable as a mass, and palpable to the touch; when the hand is dipped into them, and then withdrawn, a certain portion of the atoms are brought away on the surface of the skin; and this adhesion of the particles of water (caused by attraction of cohesion) is what we in ordinary language call wetness. Certain substances, as is well known, absorb water to a great extent; in such cases the minute particles of the water merely penetrate, and fill up the crevices in the substance. At a temperature of 40° of Fahrenheit’s thermometer water is at the point of greatest density; if the temperature is reduced below this point the liquid gradually increases in volume till it reaches 32°, when it freezes; but if the temperature is raised above 40°, the volume increases till it reaches the boiling point, at which it has expanded to the extent of 1,22 in addition to its bulk.

In consequence of this expansibility in heating, hot or warm water is specifically lighter than cold water; therefore, in heating any mass of water in a vessel over a fire, the lighter or warmed particles rise to the top, while the cold and heavy particles sink to the bottom, to be heated and to rise in their turn. In this manner the process of heating proceeds until all the particles are of an uniform temperature, which is at the boiling point, at and above which the liquid gradually flies off in the form of steam. If water be heated by the action either of fire,

or the sun's rays on its surface, the mass is longer in attaining the vaporic point than when heated from below, because water is a bad conductor of heat, and therefore the heat penetrates with difficulty through the upper stratum of warmed liquid to reach that which is beneath; and if the mass be very large, as, for instance, the ocean, no intensity of heat applied above can warm it throughout, or to any considerable depth. Certain currents or sets of the ocean are known to be produced by the effort to attain an equability of temperature throughout: the power of the sun's rays at and near the equator, by heating the sea in that part of its volume to the depth of two or three hundred feet, causes this upper stratum of heated water to flow in currents towards the north and south poles, and there to a certain extent it tempers the severity of the cold: the waters of the northern and southern tracts of ocean displaced by these currents necessarily sink below them, and push on towards the equator to supply the deficiency caused by the departure of the waters above; thus, in the economy of nature we see a process in constant action precisely the same in principle as that upon which the artificial hot-water apparatus has been established.

In the great operations of nature the withdrawal of heat to produce intense cold, and the application of heat to produce great warmth, ordinarily take place gradually; thus, although water freezes at a temperature of 32° , it is some time before the frost is completely effectual in changing the aspect and condition of liquid bodies; and when the temperature rises a few degrees above 32 , after a frost, the ice and snow which have been formed do not vanish immediately; indeed, it will remain unthawed for several days after the temperature has risen some degrees above the freezing point. By this slow process either in the absorption or evolution of heat, the animal and vegetable worlds are not liable to the injury which would ensue from instantaneous changes in the condition of their elementary fluids. Water is increased in volume by freezing, which circumstance explains the ordinary phenomena of the bursting of water pipes, and other similar occurrences during frost.

When a vessel of moderate strength is filled with water, the expansion of the latter, when converted into ice, by being exposed to a freezing temperature causes the vessel to burst; if the vessel is not brittle, but possessed of considerable tenacity, as a leaden water pipe, the rupture will seldom be observed during the continuance of the frost while the water remains in a solid state, but it readily appears when the thaw takes place, as the water is then forced out with a velocity corresponding to the vertical height of the column of water in the pipe. The fissures of rocks, too, are widened by the freezing of water which may happen to lodge in

them before frost, and this process, therefore, is a powerful agent in the disintegration of rocks. Portions of steep banks, also, from a similar cause tumble down after thaw, for the moisture in them expands when frozen, and they are thus rent in pieces; during the frost they are bound together as by cement, but fall down whenever a thaw dissolves the moisture.

The purest kind of water which occurs naturally is rain water; for all others, such as spring, river, or sea water, are more or less contaminated, or rendered impure by substances dissolved in them: thus sea water contains a large quantity of common salt, which in some places is procured from it, by exposing it in shallow pits to the heat of the sun, which causes the water to evaporate, and leaves the salt behind. This fact explains why rain water is purer than other sorts of water, because when the heat of the sun evaporates water from the surface of the earth all the impurities which it contains are left behind, and, of course, when this vapour is cooled, and falls down in the form of rain, it must be very nearly pure.

Springs which rise in the ground always contain earthy matters dissolved in them, which vary in nature and quantity with the soil through which they rise; the presence of these impurities in water in any considerable quantity gives to it that character which is termed hardness. Sometimes springs contain a quantity of iron or sulphur, and other substances, which constitute the many varieties of mineral waters; these matters, like the more common earthy impurities, are all derived from the beds of stone or sand through which the springs rise.

The air always contains in it some water, or rather steam, which varies in quantity according as the air is more or less heated: when it is hot, a large quantity of water is evaporated, or converted into vapour, and is dissolved in the air, which in consequence becomes more damp; whilst, on the other hand, when the air becomes cold, the vapour in the air is condensed, returning to the state of water, and the air becomes drier. This process is of course modified according to circumstances; thus, in dry barren countries, where the ground contains but little moisture, the air, when it becomes hot, remains of course comparatively dry, whilst in moist or swampy countries, under similar circumstances, the air becomes very damp from the abundance of vapour given off; and thus it will be seen that some of the principal differences of climate depend mainly upon the quantity of water suspended or dissolved in the air.

The solution of water, or vapour, in the air, may easily be seen on observing the steam issuing from the spout of a tea-kettle: when the water boils strongly, and there is a large volume of steam coming out of the spout, we observe that just where it comes out the steam is transparent, and almost invisible; that at a little

distance, it becomes white and cloudy, and when it gets further out into the air, it soon disappears and becomes again invisible. The reason of this is, that hot steam is quite colourless, and invisible like air; and it only becomes apparent to us when it is partly cooled by rushing out into the air, and is beginning to return to the state of water; in this state, it would fall to the ground in a shower of little drops, like rain, if it were not dissolved, and carried away by the air as fast as it is formed. The quantity of moisture in the air is also rendered apparent to us whenever a cold substance is exposed to it; this cools the vapour in the air so much, that it is condensed, and appears again in the fluid state of water, in little drops on the cold surface: thus a bottle of cold water from a deep well, brought into a warm damp atmosphere, speedily becomes covered on the outside with dew, or water thus condensed from the air.

Water being composed of two gases, as before observed, an explanation of these will be requisite. Oxygen gas is a permanently elastic fluid, that is, one which no compressing form, or degree of cold, hitherto applied, has ever been able to reduce to a liquid or solid form. It forms one of the constituents of the atmosphere, (as well as of the element in question,) is colourless, and destitute of taste and smell: its specific gravity is 1,111, that of common air being reckoned as unity: combustible bodies burn in it with more brilliancy, and more light and heat is evolved, than when combustion takes place in the atmosphere; thus, if a candle, the wick of which is red hot, be introduced into a vessel containing oxygen, the candle will instantly be lighted. Oxygen has the power of combining with every other simple body, and multifarious compounds are thus formed, such as oxides, acids, and bases, or alkalies, &c.

In the act of respiration, oxygen, in the nice economy of the human body, is made to unite with, and becomes a portion of the human frame. Vegetables also inhale, and exhale it at certain seasons, so as admirably to supply what is absorbed by animals.

It is the intensely rapid chemical union of oxygen with combustible bodies which gives rise to the light and heat of our common fires, candles, &c. &c. It may be readily procured from a variety of substances, as, for instance, from saltpetre, or the black oxide of manganese. These may be introduced into a gun barrel, with the touch-hole plugged up: from the orifice of the barrel let a tube be conducted into an inverted glass jar, filled with water, and when the other extremity of the apparatus is subjected to heat, the oxygen gas is expelled from the manganese, and entering the glass jar, displaces the water and fills the vessel. This is a cheap and easy method of obtaining this remarkable aëri-form body.

Oxygen can be prepared by putting 1000

grains of binoxide of manganese into a retort with an equal weight of aqueous sulphuric acid: this is done by means of a retort fixed over a spirit lamp; the bent tube of the retort enters a pneumatic trough, in which jars are placed for receiving the gas, as it passes from the neck of the retort.

Hydrogen gas is a permanently elastic fluid, transparent and colourless, and when pure, is destitute of taste or smell: it can scarcely be said to exist in an isolated state, but forms one of the constituents of water, from which it can be disengaged by various simple processes. It is the lightest body with which we are acquainted, and is employed in combination with other gases to inflate balloons; a bladder filled with this gas will ascend in the atmosphere, in the same manner as a piece of cork or wood plunged by force to the bottom of a vessel of water. Hydrogen will not support combustion, but is itself remarkably combustible. When one volume of oxygen is mixed with two of hydrogen, it burns with a loud explosion, by an electric spark, or the contact of a red-hot wire. The product of this experiment is water. It is said that a few cautious draughts of this gas may be taken, but it cannot be inspired for any length of time without occasioning death: frogs, however, live in it for a long time, thus shewing these animals to be very tenacious of life.

By far the most important compound of hydrogen with any other substance, is that which it forms with oxygen, the result of which, is the indispensable fluid which covers nearly two-thirds of our globe-water. It unites with other supporters of combustion; but the compounds, except muriatic acid, are not of any great importance.

Hydrogen may be prepared by putting 500 grains of zinc into a common bottle, and pouring upon the zinc three ounces of water, and five drachms of aqueous sulphuric acid: the hydrogen is then disengaged, as the acid, the oxygen in the water, and the metals, enter into combination: by means of a bent tube, from the bottle, the gas can be conveyed into jars placed in a trough of water.

Hydrogen gas, being the lightest known body in nature, and combining in the smallest proportion by weight with the other simple substances, has been taken as a standard of comparison for the combining proportions; oxygen has also, by some chemists, been taken as the standard of comparison, and represented by ten: water being a compound of eight parts, by weight, of oxygen, with one part, by weight, of hydrogen. Whenever hydrogen and oxygen gases are burnt in any proportion whatsoever, they invariably form water; they cannot be made to combine directly in any other proportions.

From this, Mr. Dalton concluded that water is a compound of one atom of hydrogen and one

atom of oxygen; but the weight of the latter being eight times that of the former, it followed that of the atom of oxygen was just eight times heavier than the atom of hydrogen: hence, if the latter be represented by one, then will the former be represented by eight, according to those who take hydrogen as the standard; those who take oxygen as the standard, and represent it by ten, make the equivalent for hydrogen 1-25: the result of course is the same, the proportions of 1-25 to ten, being exactly the same as that of one to eight. The union of gases is always effected in simple proportion of their volumes; and a volume of one gas combines with an equal volume, or twice or three times the volume of another gas, and no intermediate proportion.

The ancient eastern philosophers, who regarded water as one of the four elements of which the world was composed, were loud in their praises regarding the wonderful effects they witnessed, produced by water upon the rich soils of eastern climates. During many succeeding ages it was a common opinion that water alone was able to support vegetation. Among a host of eminent names who entertained this opinion I may mention Van Helmont, Duhamel, and Boyle. Van Helmont's noted experiment upon a willow tree was considered as a convincing evidence. He filled an earthen vessel with two hundred pounds of soil which had been thoroughly dried in an oven, and which he afterwards moistened with rain water; in this vessel he planted a willow, weighing five pounds, and placed a covering over the vessel so as to exclude dust and other extraneous matter. Here the willow continued to grow for five years, moistened occasionally with rain or distilled water; and at the expiration of this period it was taken out, and found to weigh rather more than 169 pounds; although the earth in which it had been planted, after it had been thoroughly dried, was found to have lost only about a couple of ounces in weight. It was argued from this that an increase of 164 pounds had taken place, although the only food of the willow had been water, and consequently that water only was a sufficient support to vegetation. It was, however, afterwards ascertained that the rain employed was so far from being chemically pure, that it contained sufficient earthy matters to supply the increased weight of the willow tree; and it was shown that common earthen vessels will imbibe and transmit moisture abounding with such solid matters as are usually found in ordinary vegetable productions.

Still more recent discoveries have satisfactorily proved that something more than water, when chemically pure, is necessary for the general purposes of vegetation; for whatever experiments have been tried with perfectly pure water, that is, water divested of all extraneous matters and substances, the result has been the same,

the plants only vegetating for a certain time, and never arriving at maturity, not even perfecting their seeds. The florist, without possessing any chemical science, is well aware that such bulbous roots as hyacinths, tulips, &c., which are frequently met with in glass vessels containing water refuse to bloom unless planted in the earth every other year.

Every attempt to make plants flourish in what are denominated the new earths has failed, when they have been watered with pure water, while an opposite result has been produced where water containing its usual impurities has been employed.

Without introducing any of the vast numbers of recorded experiments from the writings of Dr. Thompson, Saussure, or others of equal authority, it is quite certain that pure water is incapable of wholly supporting the growth of trees or plants. Its uses, however, to vegetation are many and important; and it is now generally believed that water is decomposed by plants, the oxygen becoming partly evolved, and the hydrogen becoming in some degree assimilated with carbon and oxygen, into a variety of vegetable substances, most of which are found to contain hydrogen under some form or other. That distinguished philosopher, M. Berthollet, was of opinion, that when exposed to the light of the sun plants possessed the power of decomposing water; while Dr. Thompson as it were, in corroboration of the above opinion, remarks, "If we consider the great quantity of hydrogen contained in plants it is difficult to conceive how they should obtain it, provided the water they absorb does not contribute to furnish it." And Sir H. Davey, in one of his lectures, has remarked, "We can only reason from facts, we cannot imitate the powers of composition belonging to vegetable structures, but at least we can understand them, and, as far as our researches have gone, it appears that in vegetation compound forms are uniformly produced from simple ones, and the elements in the soil, the atmosphere, and the earth, absorbed and made parts of beautiful and diversified structures."

Although, as has been already stated, pure water alone is not sufficient to support vegetation, the most ignorant and humble observer of Nature's handy-work cannot but be aware that the health and luxuriance of vegetation greatly depend upon a regular and copious supply of water in one shape or another, for without moisture vegetation languishes and dies, and in all living plants water forms no inconsiderable part of their bulk or solid contents: it matters but little in what form it is applied to the necessities of vegetation, whether it be that of rain or dew, or the water from the neighbouring brook or river; all water, however, is not in its ordinary state impregnated with the same earths or salts, nor contains those bodies in equal

quantities, but that which contains the largest quantity of earthy soluble matter is commonly considered the most fertilizing. Vegetation being generally exposed to the atmosphere, can under no circumstances be destitute of a larger or smaller supply of water, for the atmosphere is always more or less charged with aqueous vapours, and so strong is the attraction which plants have for water, that their roots and leaves are continually absorbing it, either from the atmosphere, or the soil which is moistened with it: nothing more clearly exhibits the beautiful arrangement of Creative wisdom than this arrangement, with regard to the moisture contained in the atmosphere; for during the hottest and driest day of the summer months, the quantity of aqueous vapour is by far the greatest, and if such were not the case, the produce of the soil would become parched, and vegetation would wither and die.

In proportion as the evaporation is the greater so is the quantity of moisture contained in the atmosphere. Upon this point Sir H. Davey makes some observations to this effect: "when the soil is dry, and the life of plants seems to be preserved by the absorbent power of their leaves, it is a beautiful circumstance in the economy of nature, that aqueous vapour is most abundant in the atmosphere when it is most needed for the purposes of life, and that when other sources of supply are cut off, this is the most copious."

The quantity of water absorbed by plants under ordinary circumstances is very considerable; and it has been ascertained that most plants transmit into the atmosphere by insensible vapour a large quantity of water daily. A cabbage, for instance, has been found to transmit half its weight daily, and a sunflower of three feet in height has been ascertained to transmit nearly two pounds of water in the same period; whilst a twig of spearmint, weighing twenty-seven grains, has been found to evolve during a long period a quantity of water, amounting on the average to about ninety-one grains daily.

Attempts have been unsuccessfully made to induce plants to vegetate in earth which is perfectly dry, or in air from which all the aqueous vapour has been extracted. It may be true that there are certain plants in eastern countries, and some mosses in our own, that are known to retain their vital principle for months or years after their removal from the places where they grow; but then the atmospheric air is not excluded from them in their severed state, and as they require but a small amount of moisture to preserve life in them, this small quantity they still continue to imbibe from the surrounding atmosphere.

Earths are generally soluble in water, and thus it is through this medium that the different materials which constitute the solid portion of trees, shrubs, and plants, are taken up, and

conveyed to every part of the structure; for without a fluid medium it would be impossible for lime, silica, or clay, to be conveyed from the ground in which plants grow to the extremities of the finest arteries that extend to the most distant and slender branches.

The office performed by moisture on the germination of seeds is in the first place mechanical, serving to soften and swell up the dry matters composing the seeds, and by assisting in the introduction of air, to facilitate the changes requisite to germination; it likewise acts chemically, its presence being requisite to the conversion of the starch into gum and sugar, and the other effects produced by the action of the air. When seeds germinate in a confined portion of air, we find that the air does not increase in bulk at all; the nitrogen is not at all affected, but the oxygen is found to have combined with a quantity of carbon, and become converted into carbonic acid, and in consequence, the insipid and comparatively insoluble starch contained in the seeds becomes changed into a more easily soluble, sweet, and mucilaginous, or gummy substance, fit for the nourishment of the embryo before its roots and leaves are sufficiently developed to enable it to derive support from the food presented to it by the air and soil. When the access of air is prevented, whilst at the same time the seeds are exposed to moisture, they are unable to undergo this change; germination, or the growth of the embryo, cannot take place, and the seeds decay; a portion of the water is decomposed, and the oxygen and hydrogen which it contained, unite with the elements of the vegetable matter, and form carbonic acid, carburetted hydrogen, and other substances.

In the earliest stages of the growth of plants all that they require is warmth, moisture, and the presence of air, but subsequently it requires in addition to these carbonic acid and light. It is the oxygen of the air alone which is essential to the germination of seeds, as the nitrogen, being unable to combine with carbon, is quite useless in diminishing the quantity of that substance contained in the seeds; its presence, however, in the air is very useful, serving to dilute the oxygen, and prevent its acting too rapidly. Seeds are found to germinate very quickly in pure oxygen gas, but the plants produced are weak and unhealthy. In the next stage of the growth of plants, or after they have formed leaves, they begin to absorb carbon from the air instead of parting with it; and this they do by decomposing the carbonic acid, which is always present in the air, and which they are enabled to effect when exposed to the influence of light.

When seeds are sown in the earth they are placed in a situation where they are protected from the action of light, and exposed to the influence of air and moisture; and provided they

are sufficiently warm, that is, above the freezing point of water, they will germinate and produce plants; below that temperature seeds cannot germinate, because, as has already been stated, the action of water is requisite in the first instance to soften the seed, and this, of course, it cannot effect when it is so cold as to assume the solid form itself. If buried too deep in the soil the free access of air to the seeds will be retarded, or even, perhaps, wholly prevented, and under these circumstances, of course, they cannot grow.

When, however, the young plants appear above the surface of the ground, their mode of growth is changed; they then require air and light, and being no longer preserved by the soil from the action of light, are immediately able to effect the decomposition of carbonic acid. The roots of plants require little more than moisture; and the water which they obtain from the soil contains those saline and gaseous matters which the plants want, whilst the leaves require carbonic acid, ammonia, and the influence of light and these they obtain by growing up into the air.

The germination of seeds may be readily effected in water, although they are unable for the most part to grow under that fluid. The change which, under ordinary conditions, is effected in seeds by the oxygen of the air, is under these circumstances caused by the oxygen of the small quantity of common air always dissolved or held in solution by water. In no case can a seed germinate unless free oxygen is present, or some other means by which a portion of the carbon in the seed can be removed.

ABSTRACT OF RULES FOR FORMING HORTICULTURAL OR FLORAL SOCIETIES.

THE society to be called "*The*

To consist of members who pay ——— per annum or upwards; and the elder ——— of whom, for the time being, alone have the control; and of honorary members, whose subscriptions are *ad libitum*, but who thereby incur no responsibility nor trouble. Subscriptions become due the ——— day of ———

The affairs of the society to be under the management of a committee of ——— exclusive of treasurer or secretary; one-third of whom shall vacate their seats annually, and the vacancies shall be filled by re-electing part or all of them, or by electing others in their stead; and the entire management of shows, prizes, and all other matters, shall be under the exclusive control of such committee.

The committee to hold shows when and where they may think proper;* to award such prizes, and adopt such regulations as they may think

necessary or desirable to secure the due encouragement of exhibitors, and the proper adjudication of the prizes.

Due notice to be given of all shows, and of the times, and the amounts for entering, place of exhibition, number of prizes, and conditions of showing.

Exhibitors always to sign such declarations as to the growth and property of flowers and plants exhibited, as the committee may think sufficient to guard against the substitution of other persons' flowers, or the practice of any other deception.

In all public or open shows,† the committee to give advantages to members, which are not to be given to persons not members.

The committee empowered to have separate shows or separate classes of exhibitions for amateurs, in all cases where they think amateurs have not an equal chance with growers for sale, or with nurserymen and professional florists, or dealers or gentlemen's gardeners.

Gentlemen's gardeners to rank with nurserymen and florists, or by themselves, when provision is made for amateur showmen; and all persons growing for sale publicly, to be deemed dealers, and be classed with such.

No member to be admitted without being proposed at one meeting, and balloted for at the next, and ——— black balls to be an exclusion.

The committee may hold open meetings for all the members whenever they think proper; and may invite such meeting, notwithstanding it comprise members not of the elder ——— to entertain any subject, and to advise or recommend them as to any subject; they may also, if they think proper, invite all members to assist in proposing and balloting in members. Provided always, that the elder ——— are alone eligible to vote in the choice of officers, or to serve office.

Honorary members may exhibit flowers upon the same terms as ordinary members. But if they exhibit by their gardeners, such gardeners must be able to sign the declaration from their own knowledge.

No person who has been rejected as a member to be allowed to become honorary member, nor to exhibit at public shows, nor to attend any meeting of the society, unless specially invited by the committee.

Any member who shall by word, or act, or observation, or sign, dispute the justice of the decisions, as to the distribution of prizes, shall be deemed to have resigned as a member, and his name be struck out accordingly.

Any member thus struck out can only be readmitted by ballot in the usual way.

Honorary members are eligible for patrons, presidents, and vice-presidents.

* If the place of show is absolutely fixed, then the first part of the rule is unnecessary.

† If there are no open shows, this rule is unnecessary.

Any distinguished individual may be elected honorary member without subscription, provided always that the number of honorary members so elected, and not being subscribers, shall not exceed —.

Committee empowered to appoint any five or more of their members to be a sub-committee for carrying into effect any measure determined upon, or to arrange for show, or superintend any matter or business connected with the management of the society.

The — elder members to be specially summoned annually on the first — in — to fill up vacancies in the committee and in the auditorship, elect treasurer, secretary, assistant secretary (if necessary), &c., and none to vote unless their subscription be paid.

Committee empowered to make rules, or by-laws, for the government of their own body, enforcing attendance, &c., as they may think proper; and to make any rules or regulations not contrary to the letter or spirit of these present rules, provided the same be regularly notified to the members.

Members liable to exclusion for showing plants not their own, or not conformable to the declaration signed, or for using any deception or fraud, and committee empowered to withhold prizes awarded under such circumstances.

Committee empowered to withhold prizes from any who have neglected or refused to sign declaration.

Laws not to be altered without the consent of four-fifths of the members qualified to vote, present at a meeting called for that purpose.

WATERER'S AMERICAN GARDENS.

Among the exhibitions peculiar to the present month, Mr. Waterer's collection of American plants in the King's Road stands foremost. No less than eight thousand Rhododendrons, Azalias, Kalmias, and other blooming plants, are there formed into a splendid garden, with all advantages of turf and gravel walks, all the attributes of a first-rate establishment, and a more gorgeous sight we never witnessed. The whole space is covered with canvass, and completely protected against the most inclement weather. The great majority of the plants are seedlings, raised at the nursery at Knap Hill, and many of the varieties are exceedingly beautiful, though the want of names prevent us from giving the kind of notice which we should have liked to have written, as there are many which would grace the best collections. Many of the standard Rhododendrons were said to be worth fifty or a hundred guineas. Among the visitors there have been many of the nobility, and the family of the Duke of Cambridge.

WEEKLY JOURNAL OF GARDENING.

THE rainy season baffles all calculation as to garden operations. The weeds grow twice as fast as usual, and the crops grow twice as fast as they ought; the one must be cut down as fast as they grow, and the other must have more room than usual. The probabilities are in favour of a long autumn, and therefore we should not hesitate to plant a crop later than is at all usual.

Thin Apricots, leaving no more on the tree than will ripen well, and not be in each other's way; and if they are six inches apart they will be the finer for it, although the tree would bear and ripen twice as many.

Take cuttings from Geranium plants, and, generally speaking, from all soft-wooded plants. Strike them under a common hand glass in a shady border of good rich, light soil. Be sure to cut them up to a joint or eye, which may be found at every leaf, so that, if you cut to a place close under where a leaf was, you are sure of being right; some of the bottom leaves should, however, be pulled off.

Examine all greenhouse plants that are placed out of doors, and see that none of them are stopped with soil, as that would soon cause the plant to decay. It is necessary for an amateur often to examine, though a gardener would detect it by the soil in the pot retaining its moisture more than the others.

The plants kept in dwelling-houses should be occasionally put out of doors, the same as greenhouse plants, to have rain, if there be any, and if not, to be watered all over the foliage.

PINKS.—Tie up the pods of Pinks, and take away all superfluous ones, that those which remain may bloom the stronger. The best tie is worsted, though bast matting is perhaps easier to use. We prefer worsted, because it is elastic, and although tied tight will give way a little as the pod swells; they must be well watered. Top dress with decomposed cow-dung, which will wash into the ground.

HEARTSEASE.—The side shoots may be struck under a hand-glass in a shady border, and those already struck may be planted out where they are to bloom. Top dressing the beds will greatly encourage the size. Those blooming for the shows should be shaded from the heat of the mid-day sun.

DAHLIAS as they grow should be fastened to their sticks or stands, and the earwigs should be as constantly and as industriously hunted as if they were all in bloom; one killed now is better than bye-and-bye. If any of the crown blooms are showing, pick them off; and if you are going to show, never let a faulty bloom remain in the plant an instant, but do not cut in the plant.

June 17, 1843.

Encyclopædia of Flowers.



ERICA VENTRICOSA SUPERBA.



ERICA ARISTATA.

ON THE CULTIVATION OF CAPE HEATHS.—PART I.

As every genus is valued for its beauty in the first instance, and the extent of the varieties in the second, there is nothing to be compared with the genus *Erica*; independently of its claims as a flower, it has large claims as an evergreen shrub, varying in form, foliage, and colour, and when we add to this the beauty and endless variety of its flowers, we are bound to give it the first place among greenhouse plants. For their beauty as greenhouse evergreens we need hardly do more than point out half a dozen taken almost haphazard from a large collection, and to observe that distinctions as wide as these might be found to the extent of hundreds, with all the variations from light green to dark green, from smooth to hairy or woolly, and producing another race of greens from dark to almost a white. With regard to the flowers, to say nothing of the colours, green, yellow, orange, scarlet, white, bluish pale and dark rose, crimson and partly coloured, there is an almost numberless variety of forms, from the round berry to the elongated tube, the diminutive bell to the form of every kind of cup and bottle; some like glass, others like wax and coral, some forming bunches at the ends of the branches, others covering them from end to end, some upright, others pendulous, but all beautiful. In short, in whatever way the genus *Erica* is considered it far excels all others as to both foliage and flowers. A very erroneous notion has prevailed that they are difficult of cultivation, and this is an error we wish to correct, and a supposed difficulty we desire to remove; we grant that unless we begin by using proper soil all endeavours would be futile,

but as this main object is easily attained, there is no good reason why every individual who can find a common pit may not grow a collection, or indeed, why a small selection of those best adapted for it should not be grown in an ordinary greenhouse; we propose, therefore, to give particulars of our own practice when we had only a greenhouse, and succeeded with some, and of our successful culture when we possessed a collection and cultivated them in pits or houses devoted to them alone.

First, as to the soil; the principal ingredient should be peat; that description of peat which will cut into lumps, being composed apparently of half decayed fibres and black light sandy earth. The cultivators near London have long obtained this from Wimbledon Common, and some of the very best has been procured from that locality, but there has also been some of the worst where it is occasionally under water or is impregnated; some irony salts is far more fatal than if the grower trusted to common sand and leaf mould, but if it be procured from the highest ground and is sweet, nothing is equal to it as the foundation of the compost to be always used. It must be recollected, however, that it is only the top six or eight inches that should be taken, all below that is doubtful, though in some situations it is good more than twice that depth; generally speaking the top spit with the leaf or vegetation on it should be taken as it comes up and laid on a heap to rot. If this peat mould on being broken into pieces, and put through a very coarse sieve, is found to contain sand and will let water through it quickly, and

being full of fibre, lays, light and spongy, it will, in all probability, be found fit for the purpose without the admixture of sand, but if on the contrary there is no sand to be seen in it, and the principal ingredient besides fibre is a close black mould, then one-fifth or one-fourth or fifth of clean sand, rather coarse than otherwise should be added, and the sand had better be in excess than otherwise; because, the only evil incurred is the necessity of more constant attention to watering the plants, from the fact of the water leaving them more freely, nor is it very important what sand is used, if it be thoroughly washed and cleared from impurities of all kinds. To this sand and peat I have used occasionally about an eighth of rotten dung from a hotbed perfectly rotted into mould, but afterwards I found that watering once in every week or ten days with a liquid manure answered every purpose, and according to my later practice seemed to give great additional vigour in the growing period; nevertheless, so much depends on the quality of the peat mould in the first instance, that nothing but trying it will quite settle the matter. There are advocates for using the peat mould as it comes off the common, but if there be any vegetation on the top it will not go through a sieve until it is rotted, and by rotting among it the peat is at least enriched by it, as all soil is by decayed vegetation of any kind; nevertheless, if we were in want, and had none but fresh peat we should use what we immediately required with about an eighth portion of leaf mould or decayed dung mould, and whatever sand it would seem to require; probably in the majority of cases, one part dung or leaf mould, two parts sand, and five parts peat mould would be a very safe compost, but even this would be the better for laying together and being chopped and mixed about for a month or two before using, and indeed when we have had turf that has been on the compost ground four or five years, it has been as good for use at the last as the first, if it has not been better than at first.

COMMENCEMENT OF GROWING HEATHS.

We set out with supposing that a young florist is about to commence growing Heaths, and that he has to buy his collection. That he has nothing but a common wood frame and light to hold them, and is not likely to have. He may go to Buchanan's, Camberwell; Henderson's, Pine-apple Place; Jackson, of Kingston; Rolleston, of Tooting; Dickson, of Acre Lane; or Fairburn's, at Clapham; and there make his purchase. Whether he have six or sixty, he will tell his situation or locality, and ask for the most distinct varieties; these will be bought cheapest and best in small pots. Select the most bushy plants, with the foliage nearly down to the bottom. Enquire at the time how recently they have been shifted. If the grower

wishes a collection of eighty or a hundred, Macknab has recommended the following, because there will be some in flower the whole year round.



ERICA DEPRESSA.

| Time of Flowering. | | Time of Flowering. | |
|--------------------|-------------|--------------------|---------------|
| Erica | | Erica | |
| abietina | Sept.—Mar. | Monsoniana | Oct.—May. |
| acuminata | Mar.—June. | mundula | Mar.—July. |
| Aitoniana | June.—Oct. | mucronata | Apr.—Aug. |
| ampullacea | June.—Aug. | mutabilis | all the year. |
| andromedæflora | | nigrita | Mar.—Aug. |
| | Apr.—June. | odorata | Apr.—July. |
| ardens | Apr.—June. | Parmentiera | June.—Aug. |
| arietata | May.—July. | Pattersonia | Mar.—July. |
| Blandfordiana | | perspicua | May.—Aug. |
| | Mar.—June. | picta | Mar.—June. |
| Bonplandia | Apr.—June. | prægnans | May.—July. |
| Bowieana | Mar.—Sept. | primuloides | May.—July. |
| bruniades | Apr.—Aug. | princeps | Apr.—July. |
| bucciniformis | May.—Aug. | propendens | May.—July. |
| carneola | May.—Aug. | pubescens | Mar.—Nov. |
| cerinthoides | Sept.—June. | pyramidalis | Feb.—May. |
| Cliffordiana | Sept.—Feb. | quadriflorh | Mar.—Aug. |
| colorans | Oct.—June. | radiata | May.—Aug. |
| Coventryana | Mar.—June. | reflexa | May.—Oct. |
| cubica | Apr.—July. | resinosa | Feb.—Aug. |
| Cussonia | Jan.—Mar. | retorta | July.—Aug. |
| depressa | June.—Aug. | savillea | July.—Aug. |
| echiiflora | Apr.—June. | scabriuscula | May.—July. |
| Eweriana | July.—Aug. | Sebana | Mar.—June. |
| elegans | Apr.—July. | Shannonia | July.—Sept. |
| exurgens | Aug.—Nov. | Solandra | all the year. |
| expansa | Mar.—July. | spuria | May.—Aug. |
| erosa | June.—Aug. | sulphurea | Mar.—June. |
| florida | May.—Aug. | taxifolia | June.—Dec. |
| fascicularis | Feb.—May. | Templea | May.—Aug. |
| glauca | May.—July. | Thunbergia | June.—Aug. |
| gracilis | Mar.—June. | togata | June.—Aug. |
| grandiflora | May.—Sept. | tricolor | June.—Sept. |
| grandinosa | May.—Sept. | tubiflora | April.—July. |
| hyacinthoides | June.—Aug. | tumida | July.—Sept. |
| inflata | June.—Sept. | ventricosa | June.—Sept. |
| Irbyana | July.—Sept. | —coccinea | June.—Sept. |
| jasminiflora | July.—Oct. | —stellifera | June.—Sept. |
| Kalmiflora | Aug.—Feb. | —carnea | June.—Sept. |
| Lambertiana | Aug.—Feb. | —alba | June.—Sept. |
| Linnæana | Jan.—May. | —superba | June.—Sept. |
| superba | Mar.—May. | —erecta | June.—Sept. |
| Linnæoides | Nov.—May. | verticillata | Sept.—Mar. |
| magnifica | June.—Nov. | vestita coccinea | Ap.—Nov. |
| mammosa | Sept.—Mar. | alba | |
| melastoma | Apr.—July. | purpurea | |
| metulæflora | Apr.—Sept. | | |

However, having purchased small plants in small pots, you have to prepare your frame for their reception. In the first place, there should be a bottom paved with slate, or stone, or flat tiles, to prevent worms from getting into the pot. Let the frame be placed on the ground, and the plants placed so as not to touch each other. Heaths like plenty of room, plenty of air, and plenty of water, and, if you have room under glass, never turn the plants out, even in summer time; let the frame be raised from the ground, with four bricks at the corners, and the glass be also raised from the frame two inches top and bottom, that there may be a thorough draft of air. In the heat of the day they should be shaded slightly—a piece of bunting, or such canvass as is used to hang paper on, will be found the best—though, for want of this, fern leaves, branches of trees, or matting, may be used. The great object, however, is, to shade without depriving the plants of light. In dull days the glass may be taken off altogether, but the hot sun is not desirable at any time. As the plants grow the pots will fill with roots, and changes are necessary. The shift from one pot to another should be very carefully managed, as it is a nice operation; the plant should be raised a trifle each time. Take a pot a size larger than the old one, and put a few pot sherds at the bottom, say an inch thick, put a little of the soil in to fill up the crevices between them, and make all level; then, by holding the plant wrong side upwards, and tapping the edge of the pot upon a table, the ball will easily leave the pot. The top surface should be rubbed off, but not enough to damage the fibre; the ball should be removed to the larger one, and so adjusted as to height, that the collar of the plant should be fairly above the surface of the new soil, which should be not full to the top of the rim, but from a third to half an inch below the top edge. This new soil should be carefully shaken or poked down the side all round the ball. As soon as they are re-potted, they must have plenty of room in the frame—if they are too crowded they will not grow freely. Many persons, when they remove the plant with its ball of earth from the old pot, remove the old drainage from the ball, and substitute new crocks entirely. We prefer laying the new crocks thinner, and not disturbing the old ones at all. In the event of several shifts, there is sure to be plenty of drainage, and it is much better to disturb the roots as little as possible at every shift. So, also, in endeavouring to remove any of the surface soil no violence should be used; generally speaking, only a small quantity will rub off, and that a small portion only near the edge. Every time the pot fills with roots the plant should be shifted, and it is not of much consequence what time of the year, but it should only be done before it starts for its summer growth, or after it

has made it, because, while in full activity it is more susceptible of a check, and the check is more injurious. As soon as they are shifted they must be well watered, and covered down close for a day or two, as well as be perfectly shaded. After this they may have all the air, as before directed: but every time the plant is shifted the collar of the plant must be raised rather than lowered.

We feel quite satisfied that sifting the earth too much takes away that which Heaths like; but we, nevertheless, like to sift our compost—it mixes every thing better, and, in our opinion, makes the potting easier, particularly as there ought never to be a larger vacancy between the ball and the pot the plant is shifted into than half an inch. This induces us to say we would rather have the soil or compost sifted, but, as we fully admit the necessity of the stuff being light, and not too small, we would use half inch meshes to the sieve or skreen. The present gardener at Bicton is rather extravagant the other way, but it must be recollected that he has had very large plants to manage, and that each shift of his was from a large pot to a larger, so that he had inches of vacancy round his ball of earth, when in young plants we cannot get half an inch. We give his treatment of very large plants in his own words. It will be seen that our soil going through half inch openings in a sieve, is as coarse in proportion to our small plants, as his stones and lumps were to his large ones.

TREATMENT OF LARGE PLANTS.

I found a very good collection of *Ericas* at Bicton Gardens: the generality of them tall naked plants, many of them five feet, six feet, and even seven feet high, with five or six great hazel and ash stakes thrust into the pots to hold them up, and tied, in some instances, with matting as wide as my finger; many of them smothered with mildew, more particularly one large *Massoni*, which was completely scorched up with it, and to all appearance dead. By continual perseverance with sulphur, I got completely rid of that pest. The whole of them being potted to such an unreasonable height above the rim of the pot, and the pot filled entirely to the rim, it was impossible to get them moist. Although the surface of the ball of earth was covered with green moss, the earth underneath was a complete dust. This is the very way in which *Ericas* are lost. I have observed it myself in the countenance of many collections. I am a great advocate for potting not only *Ericas* high, but every hard-wooded plant; but not to such an unreasonable and unnatural height as that one would suppose they were hung up to dry to make fuel of. My own maxim is, with a No. 32 pot, for the collar of the plant to be elevated above the rim of the pot about two inches, on an average; a No. 2 pot about 4 inches: of course the other sized pots

in proportion, and when shifted into large tubs allowing a little more. Surely nature never taught us to stick them up to the unreasonable height of 10 or 12 inches above the rim of a No. 8 pot: if so, of what utility can the pot be? The expense of the pot might well be dispensed with, if they could be made to thrive that way. I took a bit of stiff wire larger than my pen, and thrust into the balls of earth, to allow the water to pass: but, finding I could not get the ball of dust moist, I took a hammer and an iron wedge, and drove the wedge in to make holes. I then put a quantity of broken stones and pebbles into these holes, scraped off the moss, got a quantity of tough rooty heath soil, cut it as I required it with my bench hatchet, and pegged it all over the surface, thrusting plenty of stones, pebbles, &c., between the sods, and, routing out two inches with a crooked piece of iron all round the rim of the pots, I filled up the cavity with stones. I very soon had the pleasure of seeing a complete wig of white fibrous roots all through the sods and amongst the stones. I then prepared for fresh potting them, which was done in the following manner:—

By turning them out of the pots, and chopping off two-thirds of the lower end of the ball of earth, well draining the pots, and potting them to any desired height, filling in round, first one-third with the crumbs of the potting-bench, with some stones, and a little sand if necessary, and ramming it down tight with a stick for the purpose, then filling up with coarse pieces, stones, pebbles, flints, &c., with occasionally a handful of sand shook in amongst it. As I have before stated, I never make it a rule to mix my compost before using it for *Ericas* or any choice plants, but use the preparation to the best of my judgment, according to their constitution.

My own season for potting or fresh-shifting *Ericas* is when they are in want of it, no matter what season of the year it is. If they require shifting two or three times in the course of the year they get it; some get shifted in January, others in June, and every other month. They do not all make their growth at the same season; therefore I do not consider they require all potting at the same time, although I have heard my grandfather used to fresh pot all his in the month of March.

I must tell you how perplexed I was about the *E. Massonii*; its appearance was so bad I considered it a hopeless case. I left it standing aside, considering in what way I could deal with it. I was grieved to see it in such a deplorable state. One evening after the men had all left I made up my mind to do something with it, and, on turning it out of the pot, every particle of earth fell from it, not a single root to it. I was in two minds about casting it on the rubbish heap. You may judge my grief; I certainly never can forget it. However, I cut it back, potted it, in soil I fancied, into a rather

small pot, placed it in the corner of a cold pit, and very soon had the pleasure of seeing it breaking abundance of young shoots. It grew vigorously, soon wanted a larger pot, and is at this time in a No. 2 pot. Its next shift will be into a large tub.

I have entirely given up using broken free-stone, Portland stone, &c., this last season; finding that in the course of two seasons the heath soil is the means of *perishing* it; that it wastes and crumbles away like old mortar; and that, when exposed to the atmosphere, it is very subject to get green in damp weather, and the roots object to work or run about it. Although it is a great improvement on the old sifting system, there is nothing to be compared with common stones, pebbles, rough knobby flints, &c., such as can be picked up on any common where turf, &c. have been cut.

It is pretended by many growers that *Ericas* are a most difficult tribe of plants to manage, in respect to watering; but, if they are potted in coarse soil with plenty of stones, and well drained, using some charcoal over the crocks, and a few knobs of charcoal amongst the soil, taking care to have all sweet and wholesome, there is no fear of the plants doing well.

Cutting down old naked plants I practice at any time in the season, as I observe any variety requires it. The different varieties making their growth at different seasons is my reason for so doing. The best time is when they are about commencing to make their young wood; and I take care to leave one living branch on the plant, as I find, by cutting down into the old naked wood, and not leaving any living wood, sometimes they will not break. If a plant is properly managed from the first, and kept topped, it never requires cutting down.

In commencing tying and training the tall naked *Ericas*, I got some neat stakes made out of double laths, and painted them green, and, with some small twine painted, and green thread, I brought the heads of the plants down, and trained them round five or six of these small stakes, which was the means of their making generally plenty of young shoots. The next time of training I got them still lower down. I have of late entirely dispensed with stakes, training them in the following manner:—I put from five to ten short green painted stumps, leaving them about one inch above the rim of the pot, and run a fine wire round the whole, by which means the plant can be tied neatly down to any required shape: if neatly done, it is scarcely perceptible, and there is nothing more to do. When shifting into larger pots, it is only necessary to cut the wire asunder, and place the stakes near the rim of the pot, adding two or three more, joining a piece more wire, and shifting some of the ties a little. It is very quickly done by an active person, and is not only neat, but very durable.

TO KEEP HEATHS BUSHY.

One of the greatest faults among the growers of Heaths is that of allowing them to grow long and straggling, and ill-shaped. There is but one way to prevent this, and that is, to stop at the end of their shoots while very young. This is the reason we recommend the amateur to begin with very small plants. If it is inclined to be tall, pinch the top out—if any of the side shoots are inclined to crumble, pinch the ends out. The effect of this stopping is to make them throw side shoots, and form thicker foliage. Thus, to form a good bushy plant, you cannot well take off the top shoot too soon, and as the side shoots lengthen pull out the ends, and they will again form side shoots, so that, with care, and stopping the joints at equal lengths, and especially shortening those which would grow faster than the rest, a plant may be made feathering down to the very edge of the pot, and this must be constantly done, even as the plants get large, whenever any branch is inclined to grow out of shape.

PROPAGATION FROM CUTTINGS.

On selecting cuttings for propagation depends almost every thing. If they be taken at the proper time, and of the proper age, there are few things strike more freely; take them too young, they will damp off by thousands; take them too old, and they will be months before they strike, and the chances of neglect or accident are multiplied, and during all the time four and twenty hours neglect would kill the whole outright. When the plant makes its young wood the shoots are green and tender; as soon as the growth of these young shoots is completed they begin to harden, and when the wood of it is half ripened, is the time to insure success. Then get a wide-mouthed pot of a size according to your number of cuttings, fill this half way up with crocks or broken flower-pots, then up to within an inch of the top with the soil used for the heath, but sifted through a finer sieve, and the pot struck once or twice upon the table to close it a little, level it nicely. The top half inch must be clean sand. The cuttings should be taken an inch long, the leaves stripped off of the bottom half inch; thus prepared, water the pot of sand, soil, and crocks to saturation, take a bell glass or tumbler, or glass of any proper size for your wants, which has no vacancy for the admission of air, and by placing it in the middle of the pot mark where it will come, that you may have all your cuttings well within it; then stick in your cuttings, not necessarily more than a quarter or three-eighths of an inch apart, though of course the distance is no disadvantage, even if they were an inch; the half inch stripped of leaves is to be thrust into the sand so as just to reach the soil, and not enter it, a very gentle watering, with a fine rose on the watering-pot, will close the sand about the stems, cover with

the glass, and put it in gentle bottom heat. The gentle bottom heat is best provided in a hot bed made on purpose. Tan three feet thick, confined in a brick frame, or dung bed, made up about a foot high, and a common garden frame full of tan over it to plunge the pot in, or a declining hot bed of any kind. The glass must be taken off every morning, and the inside wiped dry; the cuttings must also be watered daily, and shaded from the sun. The cuttings will soon strike, which will be indicated by growing freely, still the same care must be taken as to wiping the glass; but when growing after they are struck, an hour's air will not hurt them if the sun be not admitted to them. Different cultivators have different methods of preparing the pots for the reception of the cuttings. Mac Nab, for instance, fills up the pot with nothing but the drainage and sand, he has no soil at all. He prefers pit sand; but so that the sand is fine and clean, it matters very little what kind. We prefer silver sand, and we find nearly all the best propagators round London use that rather than any other. Again, Mac Nab takes the cuttings off close to the old wood; this may be very well for those which make but short growth, but it is by no means necessary. He recommends, too, that the end of the cutting should be cut clean with a sharp knife or scissors. Now, we consider that the bruise which scissors make is in many instances fatal. In fact, they pinch off the piece instead of cutting, therefore avoid scissors. Mac Nab also places his cuttings in the stove without covering them with a glass; and we can imagine that in such a master's hands it would matter but little what was done, he could detect in an instant any thing that was wrong, and could do with impunity, what another man would fail at altogether. Another mode of dealing with the cuttings after they are placed in the sand is, to keep them in the common greenhouse or cold frame, without any other care than shading them, watering them, and daily wiping the glasses.

PROPAGATION FROM SEED.

Fill a wide-mouthed pot with half crocks or drainage, and the other half the usual heath compost, the upper inch of which should be sifted through a fine sieve. Knock the pot on the table, to shake the compost pretty close, and level the top, the soil being full to the top as nearly as possible. Let the seeds be sprinkled very thinly over the surface, and with a fine sieve, that would let nothing through larger than a pin's head, sift the smallest possible quantity of soil over them, water the seed with a patent syringe, which throws the water not heavier than dew (although it will soon saturate the compost,) and will not displace a grain of soil. If the seeds of the heath are buried much they will not vegetate, and hence many of the failures, which are attributed to bad seeds, and especially

when the seeds are imported. The pots containing these seeds should be covered with a hand glass, or be placed in a garden frame, or both; and it must be recollected, that on no consideration must the soil in the pot be once dry. The watering should be carefully administered every morning; they must be shaded from the heat of the sun, and have it only morning and evening. Here the seeds may remain till they come up, constantly watched and watered, and, whilst small, the sun must not be allowed to reach them, but as they become stronger they may receive the morning and evening sun, and the glasses may be occasionally taken off altogether in mild weather. As soon as the plants are large enough to handle well they may be pricked out, an inch apart, into other pots, prepared in the same manner as the seed pot was prepared. The proper method of doing this is, to cut a wood skewer, flat on both sides at the point end, and blunt the point. With this to push down by the side of a small plant or a patch of them. After well watering the pot, you can raise them up with the soil about their roots. With the same instrument you can make holes in the new pot of earth, and plant them the proper distance apart, being exceedingly careful that you put the roots no deeper than they were in the seed pot, or many will assuredly damp off and die. In these new pots they will make vigorous growth; but they must be watered well, and covered up in the frame a day or two, to get their roots established. They may now have more air and sun, but the constant watering must not be omitted—they must never get dry under any circumstances. Here they may grow till they are as large as cuttings are when planted out (which is twice as large as when they are put in); and now comes the first potting time.

POTTING SEEDLINGS AND CUTTINGS.

Prepare a number of what are called thumb pots, and which run somewhere about two inches to two and a quarter across the top. Let these have a bit, or bits, of fibrey turf that will occupy one-third of the distance up the pot when slightly pressed into it; this makes decidedly the best drainage for small pots. Upon this put enough of the prepared compost to nearly fill the pot, and have some that has gone through a fine sieve handy to fill up with after the plant is placed there. Now, with your wooden spud, after watering the young plants well in their old pots, raise them up one by one, and place them with all the soil about their roots in the new ones, keeping the top of the root quite as high as the top edge of the pot, and filling up all round a trifle lower than the top edge, that it may hold water. Thus potted, they must be well watered, and placed in a close frame, or under a hand glass, for a day or two to establish themselves. There is now more danger than

ever of losing them, in the event of neglecting to water them, for the small body of earth they are in, and the great facility for draining, would cause them to dry very rapidly. There is no difference in the mode of potting seedlings and cuttings—the roots of the latter are as tender as those of the former; and the necessity of conforming in every particular to the rules laid down for seedlings cannot be too strongly impressed upon the young cultivator. We now leave them in the common garden frame, with a light over them, and perhaps some of them tall enough to require the end of the shoot to be stopped—except that those who grow for sale want them tall rather than handsome.

THE FIRST STRIKE.

As soon as the plants have begun to grow they may have as much air as possible, but very little sun, and warm showers will at all times refresh them. If at any time you observe a plant moist when the rest appear dry, examine it directly, because it indicates an imperfect drainage, or that it receives the drip from the glass; this may proceed from an imperfection some distance from where it falls—for the wet may run in at top, and will run down the inside of the glass, until it meets with some obstruction, when it falls in constant drips, which deal death to any description of plant that receives them, unless detected in time. If the cause can be ascertained, remove it—but if not, take the plant from the spot, so as to avoid it for the future. When these plants have made their growth for the season, you must take one from the pot to see how the roots have progressed; this is easily done by putting one finger on each side the plant, having the pot bottom upwards, and tapping the edge on the bench or table, or the edge of the frame, the ball will leave the pot whole. If the roots appear all round the side of the ball, they will require to be removed into pots one size larger, what are called small sixties, which are nearly three inches across, will be the proper size. Your compost must be as before, and be rubbed or sifted small enough to go down the vacancy between the ball of compost and the side of the new pot. Break some potsherds or crocks very small, and cover the bottom of the pot with them; then, having put sufficient compost in to raise the ball the proper height, rub off a little of the surface at the edges, and place the ball and plant in the centre of the pot, at such height that all the surface shall be raised above the surface of the new compost, which must be carefully shaken and poked down all round to within a third of an inch of the top of the rim; the collar of the plant and the top of the old ball being quite above, and even with the edge of the rim itself. In poking the compost down between the ball and the side of the pot, great care must be taken, that the fibres of the root are not damaged; this must

be done by having a stick not more than half the thickness of the vacancy, and always pressing against the side of the pot. It is easily seen, that so long as the stick rubs up and down against the side of the pot it cannot touch the fibre; and although it is not necessary to ram it hard, it is necessary to take care that there are no vacancies between the ball and the pot, therefore, the best way is to put a little in all round, jar the pot against the table, and use the stick gently, then a little more, and again press a little all round, then fill up to the proper height, and it is done. When the potting is complete, place them all in the frame again, and water liberally, closing them altogether for one day, and shading them from the sun as well as protecting them from the wind. We are now supposing that both cuttings and seedlings have undergone their second potting, and that all this time, whenever there has been a shoot inclined to ramble, it has been regularly shortened, for, as we have before shown, on this depends the entire beauty of the plant.

SEASONS FOR STRIKING CUTTINGS AND SOWING SEEDS.

The season for striking cuttings depends rather upon the state of growth than the time of year, because, when the wood is half ripened is the time to take them; and as different varieties bloom and make their growth at different times, those different periods must be selected for the operation. There is scarcely any doubt of success at any time if the rules here given be attended to. With regard to sowing seed, we think it should be done the instant we get it; but in the case of seed saved by ourselves, or known to be just saved, it is worth waiting from the autumn or winter to the early spring, because the small plants get well established before they have to bear the winter. It is a general and a well-founded opinion, that the sooner the seed is sown after it is ripened the sooner it comes up, and the stronger it is after it is up; nevertheless, the disadvantages attending its culture through the winter months, more than counterbalances any of the advantages of sowing directly. However, imported seeds ought to be sown the instant we get them, because every month reduces the chances of vegetation as these seeds get old.

TREATMENT OUT OF DOORS.

We have recommended Heaths to be always grown under glass, because they are at once protected from excess of wet and of wind, while there is an opportunity to giving them all the ventilation or air you please; but if you have not the convenience for all or any, having other summer use for your glass, they must be placed in a well protected quarter, where the sun is not reflected on them from a wall. They should be plunged half way up the pot in some medium unfavourable to worms, but porous, to drain

away the wet, for the double object of preventing too much heat reaching the fibres, and keeping the plants from blowing over. This medium should be cinders, lime stone, brick rubbish, or something equally dry in its nature. Ashes are too small, unless the dust be taken away, and when saturated are no preventive to worms. Sift the dust out, and let the cinders only be used, they will be found an excellent thing to plunge any plants in. Heaths, must when placed out of doors, be so distant, that the wind cannot make them touch one another. Here they may remain from the time they are put out, which should be May or June, till September or October. Heaths do not mind a little frost, and those in the autumn are not generally very serious. Although this period for the out of door treatment is mentioned, as fast as any come into flower they may be removed under cover, because the wet injures the bloom, and most persons wish the beauty of them to be seen in or near the house; when they have done flowering, they may be taken back. They should be examined daily, to see if they require water, and as they have a perfect drainage under them, the watering should be copious. In any dry weather, they should also be syringed over their heads with a fine but sharp shower, this will generally prevent the green fly; but if any of them are infected, take them instantly into some house or pit or inclosed building, and fumigate them with tobacco smoke two evenings following; many will be found dead the first morning, but the remainder will be cleared away by the second.

TREATMENT OF SPECIMENS UNDER CANVASS.

Canvass houses for plants is not a new thing with us. An article, in the early part of *The Gardener*, upon this subject might be read with advantage; but so far as Heaths are concerned, it would be of the highest advantage to grow them through the summer in a building of this description. The sides should open like shutters, quite square out in two leaves top and bottom, the top should roll up and let down at pleasure, so that the gardener, without the least difficulty, could admit or reject wet, heat, and wind. For a general collection of handsome specimens, nothing would be more effective. It is very true, that Heaths are not injured by winds of an ordinary kind, that nothing does them more good than the breezes blowing among their branches and agitating them, and that the more air they have the better it is, but gales are by no means desirable. Again, it is quite certain that Heaths in their natural climate are exposed to hot sun, and, therefore, that the hot sun will not kill them here; but, in their natural state they are in the open ground, and not potted, therefore is it necessary to protect them against the worst of it. For this purpose, then, nothing equals canvass house, made upon the plan recommended for Tulips in the treatise on that flower.

Encyclopædia of Flowers.



ERICA VESTITA COCCINEA.



ERICA AITONIANA.

CULTIVATION OF HEATHS.—PART II.

In the first part of this Treatise we have given as much information as will enable a young beginner to cultivate Heaths with some chance of success, if he only follow the dry rules, without speculating upon cause and effect. In the second part we shall endeavour to give some reasons for the particular treatment we have recommended, and introduce some of the speculations of other cultivators; for it will be seen that some difference of opinion exists upon this as well as many other subjects. For instance—on the subject of the soil in which they are to grow: SWEET says they will not thrive without good peat soil to grow them in. BOWIE says a good sandy loam is the best, and that peat soil is not necessary, but even proves injurious. LOUDON talks of leaf mould being a substitute for peat. Now, with regard to BOWIE, he must have founded his opinion on some rank poisonous stuff which may be easily found, and in such case sandy loam would do better; but we defy any gardener to say that Heaths can do well in it; and with regard to Mr. Loudon, nothing can be more erroneous than that of comparing leaf mould with peat. It is in every way contrary—it is very close and adhesive, when peat is very spongy and light. Sweet is quite right when he insists that peat is necessary in the compost, and we have already said how it is to be used.

ONE SHIFT SYSTEM.

There is at this time a curious controversy upon the subject of the shifting, which we re-

commend in the progress of the plant from small to large; some theorists insisting that they grow better when planted at once in the largest pot, and their theory is, that as a plant grows best in the ground, as may be seen when geraniums are turned out into the border in summer, or when plants are turned out in conservatories, the nearer we can assimilate the treatment to such turning out the better. They argue that the roots are at liberty to grow until they reach the side of the pot, and if placed in a very large pot at once, it is the same to the plant as if it were in the open ground. This is very pretty theory. The plant never does so well as while growing in the fresh soil; and the idea of its growing for years in a pot, from the soil of which all the good has been washed out by the hundreds of waterings it has had, is preposterous. Now, in the open soil nourishment is constantly afforded. It is always generating in the soil, or is supplied to it; it is not sour with confinement and washing, but a pot, or rather the soil in it, is constantly getting poorer and worse. It is impossible to conceive how any one could entertain the idea, that a plant should for years be growing in a stagnant soil as well as if it was supplied at the very points of the roots with fresh compost to grow in, as fast as the old is exhausted. It is one of those fallacies which men find out when too late. Nobody can deny that plants would flourish in a most extraordinary manner when first put into a large body of soil which suits it; but it is not the first nor the second year's growth that will prove the

efficiency of a system; and those who look at the rapid advance of plants grown upon the one-shift system are only witnessing the best part of their progress. It may be argued, that manure water, or other nourishing liquids, will restore the nourishing character of the soil, but there is not a nostrum that will make the sour compost that has occupied a pot for years, so good and so nourishing to the plant as that which is fresh supplied at every shift, under ordinary treatment; and if we might be permitted to use the names of very enthusiastic amateurs who have been misled by the novelty of the proposal, we could give accounts of many beautiful specimens completely ruined by the operation. Over potting is a fault which has killed many a plant; and hundreds of specimens which have been doing badly have been recovered by lessening the pot, and allowing the plant a moderate portion of nourishment around the roots, as in the instance mentioned in the first part of this Treatise, relating to the plants at Bicton. But suppose the one-shift system were really somewhat better than the plan adopted by the best growers, what sort of houses must be prepared to hold collections of small plants in pots like bushel measures? Every private collection would require twenty times the glass—every nurseryman must enlarge his houses or do less business. A collection of a hundred Heaths, that would occupy for years only a garden light or two, would require a range of houses, and all the means of protection in summer and winter would have to be increased. Those who like the one-shift system may adopt it, but we who have seen large Heaths grown by M'Nab, by Pince, of Exeter, and others, upon the system we have recommended, are content to let well enough alone, and repudiate the idea of trying silly experiments at the risk of losing, with the vain hope of excelling those who have never been excelled, and are very unlikely ever to be beaten.

Indeed, M'Nab, who is considered a good authority, from the fact that nobody could equal his culture, until he published his work on the subject, and taught them, tells us very distinctly that shiftings are necessary; and here are his own words—they will be found to confirm our notions.

"In shifting Heaths from one pot or tub to another, I take any time from *March* till *August*, as opportunity will permit, or the state of the plants require. I have shifted Heaths as late as *November*, and they have done quite as well as those repotted in summer. This time, however, is in general quite unnecessary, unless in the case of broken pots, or other accidental circumstances, or in the case of Heaths being planted in the open ground in the summer. If any of them should be required to be put in the house in winter, they may then be taken up, and put into pots in the autumn, before the frost sets in

very severely; but, unless under particular circumstances, it is quite unnecessary to shift Heaths late in autumn; and I merely mention this to show that there is no danger to be apprehended from doing so at that time. I am aware that many say that Heaths should be shifted in spring, or early in summer, in order that the pots or tubs may be filled with roots before the winter sets in; but if treated in the way I shall recommend, they will do just as well when shifted late in the summer as at an early period, and even in autumn, when necessity requires it.

"Before beginning to shift, I have a quantity of the soil already mentioned riddled through a very coarse or wide meshed riddle, (if the plants are small, of course the riddle should be finer.) I would always recommend the earth to be riddled, because it mixes the earth and sand much better than chopping can do; and if it has lain for some time in the compost ground nearly all of it will pass through the riddle; but what little does not pass through I keep to put in the pots over the draining. I use either broken pots or cinders for draining, whichever is most conveniently obtained. The latter is objected to as a drainer for some plants, but, from practice, I have seen no bad effects from using cinders for draining, and I know Heaths thrive as well, and their roots matt as freely, among cinders as they do among potsherds. This, I think, is important to know, for the quantity of draining I use, and which I find quite necessary, for the growth of Heaths is such, that to grow a large collection of them to a great size, would require a person to be in the neighbourhood of a pottery or brick work to get a sufficient supply. I always use plenty of draining. The largest sized pots or tubs should have from three to four inches deep, and the smaller pots about the same in proportion to their size. There is scarcely any danger, indeed, of giving too much draining. When this is done, and the plant raised a little higher in the pot at each shifting than it had been before, that is, after two or three shiftings, the old ball about the stem of the plant should be raised two or three inches above the level of the edge of the pot or tub, keeping sufficient depth between old ball of earth and the edge of the pot or tub to hold water."

We do not like cinders for draining inside the pots, though we confess that when the small ashes are sifted out of them we do like them as a medium in which to plunge pots when obliged to turn Heaths out of doors. However, we know of nothing deleterious in cinders. We hate the look of them, and the handling of them, and we do not like them any how; nor is there any necessity to use them while other equally good, and much cleaner drainage can be had.

SEASON OF SHIFTING.

We, who consider the one shift system the system of a monomaniac, and who could refer to the untimely end of valuable specimens destroyed by it, are so fond of shifting, that we agree with a first rate cultivator in the policy of shifting as often as the roots reach the sides of the pot. He says he does not mind shifting even three times in a summer, if it happens to be a favourite specimen which he is desirous of pushing on a little. He thinks, however, it is quite unnecessary; and when the plant is large and vigorous he does not care about a shifting oftener than once in two years, therefore he puts the plant into a tub large enough to grow two year's root before it reaches the side. M'Nab says, after enjoining regular shifting, and admitting that he has often shifted Heaths twice and three times in a summer with the greatest success. "It is, however, quite unnecessary to shift a Heath until the young fibres have come through the fresh earth given to it at its previous shifting, and begun to extend themselves round the inner side of the pot or tub, but as soon as this takes place they may then be shifted with advantage. This frequent shifting, however," continues the author, "*is quite unnecessary, unless it be to encourage a favourite specimen.*" There is an inconsistency in this declaration which we cannot reconcile at all with our notions of cultivation. The directions of all authors should be those which enable a follower to do the best that can be done, and whatever leads to inefficient or imperfect management must be bad. Here we have Mr. M'Nab acknowledging one particular treatment is the best, and that he applies it to a favourite specimen, and yet that such treatment "is quite unnecessary." We confess, that if we knew one practice to be better than another, that is the practice we should adopt; and, inasmuch as we have already recommended it, because we know it to be the best, we deny that it can be "quite unnecessary." Indeed, if a man wish to shine in the general culture, he should use all his family as if they were favourites.

THE HEATH HOUSE.

Upon the subject of Heaths in houses, the principal caution to be used is to avoid fire-heat if possible. Slight frosts, as we have before said, do not materially hurt them, but heat of any kind in winter is dangerous, and so long as the principal frost can be kept out by covering up instead of lighting the fire, so long should it be done. Indeed, the cultivator already quoted, goes so far as to say, he has had the Heath house without fire-heat when the glass has stood out of doors 16 deg. below freezing. It matters very little how a house is kept warm, so it be kept warm, and when this can be done with

covering it is best. Mr. Macnab says, he has had the whole of his Heaths in the house frozen for days together so hard, that the pots could not be removed from their places without breaking them, and fresh air constantly admitted at the time, and he has never seen one of them suffer in the smallest degree from it; but, on the contrary, thrive better than under any other treatment. This would alarm us, though we have no doubt some varieties would stand a good deal of frost. Had he mentioned some varieties, instead of the whole of his Heaths, we should have been less surprised: all we can say is, we should not wantonly risk any frost; and we now quote the author, rather to show what has been written, than what we should write. We have lost specimens by frost, when we hardly think there was 5 deg. Mr. Macnab says, that—

"The time when these plants suffer most from heat is, when a sharp frost sets in, and no heat is applied till after the frost has taken effect in the inside of the house. Then a fire is put on, and the frost is driven out. It is better, no doubt, in such a case, to keep out the thief if you can; but if once let in, keep him in, and never attempt to force him out. We know that Heaths in the open air will not suffer when the thermometer stands 4 or 5 deg. below freezing; and we know also that Heaths in the house in winter will bear the same degree of cold with impunity. Now, we shall suppose the thermometer out of doors to fall to 12 or 14 deg. below freezing, and no heat in the Heath-house; the thermometer in the inside may then be 4 or 5 deg. below freezing. If there be no appearance of a change, then it is necessary to apply heat to the house; but all that is wanted in this case, is just enough to keep the temperature from getting lower than it was when the heat was introduced. Suppose the thermometer to sink to 18 or 20 deg. below freezing during the night, the instrument inside should range as near as possible to what it was when the heat was applied. This, however, requires very particular attention. From what I know, Heaths will suffer, if, after the thermometer has fallen 4 or 5 deg. below freezing, inside of the house, heat is added, so as to raise the temperature, and drive out the frost, during the time the thermometer is still sinking out of doors. It would be much better if the house were left without fire-heat, even with the thermometer out of doors 15 or 16 deg. below the freezing point. Such treatment is bad for all plants, but more particularly for Heaths. If we were certain that the thermometer during the night would not sink more than 10 or 12 deg. below freezing out of doors, no artificial heat whatever would be necessary in the Heath house." It does not, however, follow that the house should go down more than one or two degrees if well covered up.

We would rather grow Heaths in a pit than a house, because they can be covered up with greater care, but the pit should be so constructed that air could be let in at the bottom as well as the top, for it is impossible to give them too much air. There should be a thorough draught. If a house be built on purpose, it should open at the ends as well as the tops and sides. It is not at all uncommon to take off the glass complete from the Heath house, and to let the wind play among the branches, giving them all the benefit of an out door station; the only objection we have to this is, that you cannot protect them from the extremes of wet and heat, which are always more or less injurious.

GENERAL SUMMARY.

To sum up our practice in a few words—it consists of shifting the pots as soon and as often as the fibres reach the side, to keep the plant well up above the soil; to stop all the branches which grow rambling, or which tend by their growth to prevent the bushy habit; to give as much air as possible on all occasions; to avoid fire heat, if it be practicable; to water constantly, more or less, according to the weather; to syringe them over the foliage, or let them have the rain; frequently to examine the drainage; always to plunge them when they are put out of doors; and to protect them from extremes of heat, cold, and wet.



ERICA TORTULIFLORA.

FLORICULTURE.

On Thursday, the 8th of June, Mr. Glenn, F.H.S., delivered at the Royal Western Literary Institution, Leicester Square, a Lecture on "The Cultivation and Improvement of Flowers, illustrated with living specimens." The attention of the audience was agreeably occupied for an hour and a half, and at intervals the beautiful plants and flowers which decorated the theatre, together with some printed diagrams, were handed round for inspection. The Lecturer commenced the following introduction, with some pertinent remarks on the mere study of botany, and the actual practice of floriculture, and continued pretty nearly as follows:

"Ladies and Gentlemen.—Some of my worthy friends connected with this institution have been pleased to fancy that I could entertain you an hour with some gossip about flowers, and that it would be more entertaining than a dry lecture on the science of botany. I fear they have over-rated my powers, and that I shall hardly be able to interest you, although flowers are beautiful subjects, and I have a few which

in their way are pretty. I fear I must draw largely on your indulgence; and if you should not be entertained with what I say about flowers, you must make up for the deficiency by admiring the flowers themselves. We have here about twenty-six varieties of Roses, from Messrs. Paul of Cheshunt; a very fine collection of Pansies from Mr. May of Tottenham; a quantity of Geraniums from Mr. Panplin of Hornsey; and some American plants, Rhododendrons and Azalias, from Mr. Waterer, of Knapp Hill:—these will enable me to show in some measure the advances which have been made in floriculture, which is as distinct as possible from botany, as I shall presently convince you." Mr. Glenn proceeded with some humorous remarks on the plans and purposes of mere botanists, and produced from the audience some hearty bursts of laughter. He continued: "*Botany* teaches us the construction of flowers, and enables us to classify them according to such structure. To those whose time is valuable, or whose minds are actively inclined,

the study of botany would be irksome; to succeed at all, large demands must be made on our time and perseverance, and after we have accomplished the object of our study, up to a professorship, unless we possessed more knowledge than some of the present ones, we should probably experience as they do, the pleasure of contradicting one another. It is impossible to quarrel with botany. For those who have nothing else to do it is a delightful study, and for those who intend to make it a profession, it may turn out a profitable study; but for those who are content to possess a beautiful garden at home, and to be made acquainted with all that is necessary to cultivate and improve flowers, botany is perfectly unnecessary. *Floriculture* is, in the common acceptation of the word, the art of raising, cultivating, and improving flowers; and some of the best florists in the kingdom are wholly ignorant of botany. Floriculture, indeed, flourished most among very illiterate men, and the science owes some of the greatest advances, some of the most beautiful objects, to poor weavers of Spitalfields and Bethnal Green. Such was the enthusiasm with which these uninformed men (who knew no more about botany than of the men in the moon) pursued their fancy, that I have heard a respectable nurseryman affirm he sold one of them a tulip for £10, which was to be paid at three shillings per week, and although this man's family were almost wanting common necessities, he never missed paying the three shillings until the debt was satisfied. Botany, then, is a theory which enables the traveller who discovers a plant to tell what family it belongs to, while we who are at home have that information given to us when we buy the plants. The botanist cracks the nut, the florist eats the kernel, and they may as well insist upon a lady's becoming proficient in zoology before she may keep a pair of carriage horses, or studying conchology before she may enjoy an oyster, as to tell us that it is necessary to study botany before we can manage a garden. Let it not, however, be supposed that I object to botany; on the contrary, I would have every body who likes it, study it; all I insist upon is, that they who do not like it may be allowed to cultivate flowers without it, and that I, whom the world has been flattering enough to consider a middling florist, may not be obliged to lose more time over the dry study of botany than is quite agreeable. Flowers and plants are divided into genera or families, species which are distinct branches of such families, and varieties of such branches, which are raised from seed improved by cultivation; upon this subject there was some time since a brief, but plain paper, in Mr. Groombridge's *Practical Florist*, of which I remember enough to serve the present purpose. To illustrate a family, the *Viola* or Violet was mentioned, as comprising the *Viola Odorata*, a sweet violet, and the *Viola Tricolor*, a common heartsease,

both of which are distinct species; they appear, indeed, not to partake of each other's habits; now, all who are familiar with the sweet violet, know that there are white, dark blue, pale blue, double and single; and as to the heartsease, there are as many forms and colours as there are grains of seed sown. *Viola*, then, is the genera or family; the sweet violet and the three-coloured are the distinct species of that genera or family. The varieties of the sweet kind are the varieties of one species, and the varieties of the heartsease are the varieties of the other species. This, then, explains the difference between genera, species, and varieties. The botanists, however, who made these divisions have not been well pleased at the progress of floriculture. The florist who has produced the ranunculus of the garden from the buttercup of the field has somewhat disturbed the little arrangements of great men. For many years every plant of the same family that exhibited the most minute difference was dignified with the name of a species. But the florist no sooner takes a plant in hand than he alters its character, and a subject of which hardly two varieties exist, may be soon by his skill multiplied to thousands. Flowers in their wild state are found to differ but little from each other in form or colour, still, by closely examining them, a difference will be found. Size is increased by culture. Seed saved from those which differ most will still produce others that differ more. Select each year those which are farthest removed from the parent, and the difference will still go on increasing, until you may almost produce what you please. For the great Creator seems to smile on our efforts, and mercifully permits us to perpetuate the varieties we produce. Many of the beautiful subjects obtained from abroad differ from those we already possess of the same family. The hand of nature has performed the office which the cultivator might do, and the arrival of a strange variety is the signal for the exercise of the florist's ingenuity. The great variety produced in some families of plants and flowers, while others produce apparently the same year after year, arises from want of inducement in the florist to alter the character; but when it is considered that by a grain of dust transplanted from one flower to another, on the legs of an insect, a change is wrought, it need not surprise any one that this operation, improved by the ingenuity of man, should be capable of doing wonders. The *Rhododendron*, an American plant, capable of standing out of doors the hardest winter, had a poor narrow-petalled starry flower, which came in small heads, and though pretty, was nothing to boast of; some had white, and some purple flowers, but no other colour. From the mountains of Nepaul we procured a splendid scarlet one, called *Arboreum*. By applying the dust of that flower to the hardy common ones, both purple and white, and sowing the seeds saved

from them, we have succeeded in producing the rich scarlet of the tender exotic on the hardy plant, and multiplied the colours, shades, and habits, to an endless number. Botanists have cried out loudly against this innovation of the various species; the Nepal variety was no doubt a distinct species; the American one was a distinct species; but the mixture of these two produced numerous varieties more rich and beautiful, and valuable, than either of their parents. Many other descriptions of rhododendrons have been introduced to this country, and the florist has made the most of them. The azalia and rhododendron, two families hitherto distinct, have been successfully hybridized or mixed, and they have produced the most magnificent bloom. These noble flowers, borne on nearly ten thousand plants, some of them nearly twelve feet high, may now, and for some time, be viewed on the grounds of Mr. Waterer, King's Road, Chelsea.

"Mr. Smith, of Norbiton," said the lecturer, "has produced between the rhododendron and the yellow azalia the most beautiful yellow rhododendron, as large as the specimens you see before you, and of as exquisite a form. The mixture of this yellow flower with those of purple, crimson, and white, will give rise to endless novelty of colours, and create almost a new race." The lecturer next proceeded with the subject of Roses, and exhibited the varieties mentioned in his introduction, particularly calling attention to a bright yellow rose, of beautiful texture, then presented to the company, and continued thus:

"The rose, common dog rose, is of the same family as the others. A pinch of seed will now hardly bring two flowers alike; what was the progress? no doubt the gradations from the single flower were gradual. The buttercup is of the same family as the ranunculus, of which many hundred of varieties are raised and catalogued at 1s. to £5 6s. each. The Dianthus family, which comprises among others the pink, piccotee, and carnation, is especially indebted to the florist. Here the change that has been wrought is almost within our own recollection, and, indeed, when seed is now sown of pink, piccotee, or carnation, however carefully it may have been saved, many will come single. From the single flower (exhibited by the lecturer), the first improvement was an additional row of petals. By discarding all others, and saving seed from that only, taking care that the single flowers were all removed to prevent any admixture of their dust, the florist hoped to obtain double flowers, but with all the art he could use, all the pains he could take, probably it may have been years before any distinct advance crowned the efforts of the cultivator with success, when a third row of petals was perhaps all he had. But there is, however, this one advantage attending the Florists' labour; when he has achieved an advance, however small

it may be, he can stand there and rest. Whatever distinct variety he has produced, he can perpetuate. It seems as if Providence, to encourage man in the best use of his faculties, or to use a Scripture illustration, to make the best use of his silver talents, permitted him to enjoy the fruits of his labour in an assurance that what he has accomplished may be his own. The florist who first produced a decided improvement in any florist's flower, could multiply it to infinity. It is one of the merciful privileges granted to man, that he is permitted to domesticate and appropriate both the animal and vegetable kingdoms, and to improve them from year to year according as his wants, nay, even as his vanities may dictate to his finite imagination. The same double Piccotee, or Pink, or Carnation, that was first produced, could have been perpetuated to this day; and this was a security against going back to the original single one. From this flower, which had but three rows of petals, seed was still saved; flowers yet more double were produced, and at length we had the magnificent Carnations and Piccotees which grace our gardens in July, and which are so perfect in form, so beautiful in colour, and so noble in habit, as to almost defy us to improve them. All this time every good variety which was produced was named and recorded, until hundreds, as distinct as possible, were named and catalogued, and still keep their places among some of the collections of amateur florists. The Dahlia was, in the recollection of many present, a single flower, a row of five or six petals was all that could be seen. A large yellow-eye, which delighted botanists, and the five, six, or seven single flat petals, possessing no other novelty than colour, were all there was to admire; but there were various colours. The botanists condescended to honour these colours with botanical distinctions: white was alba; scarlet was coccinea; purple was purpurea; red was sanguinea; but the florists soon spoiled all the botanists' sport; their species were soon reduced to varieties; the language of botany could no longer find terms for the hundreds of shades; and the flowers with a second row of petals were called monsters. Then it was that a learned professor fired off invectives against florists; then it was that we were accused of destroying the distinct species, and introducing monsters in their places. The Dutch florists outran us in the production of the double Dahlias; and while we were trying hard in this country to improve the flower, or, as the botanists call it, spoil it, our Dutch brethren produced them fairly double. No sooner were they imported here, than the English florists redoubled their exertions; and it is impossible to find in any part of the world any so fine as those raised in England. At the period when the double Dahlias were imported from Holland, there were many of curious form; and, unless

some check had been put upon the showing of ugly, misformed flowers, every thing at all different to what we had already would have been named and sent out. Such was the rage for novelty, that English nurserymen travelled to Holland and France after new things, no matter in what their novelty consisted; and there was no little trickery in the business of selling for large sums, things worth nothing; and our English friends were not much the better for their continental bargains. I can perhaps, observed the lecturer, illustrate these remarks by the following authentic anecdote:—A French nurseryman, who distinguished himself early in the cultivation of Roses and Dahlias, determined to surprise an enthusiast who was in search of novelties, took him into his garden and showed him two magnificent striped Dahlias. The astonished visitor was in raptures. Muddy and sloppy as the ground happened to be, he dropped on his knees to take a nearer view of the lower blooms, and offered one hundred guineas for the plants. The Frenchman refused, the offer was increased, and it was with difficulty the man was removed from his kneeling posture. At day-break in the morning he was again at the nursery, and as it was not open, he scrambled over the wall. There was the identical place where his knees had been sopped the day before, but the Dahlias were changed. He went to rout out the Frenchman from his bed before his usual time, to inform him of the robbery; with great difficulty the half crazy Englishman was prevailed upon to take breakfast before they went together to the ground, and on their arrival the two plants were as bright and beautiful as ever, and in the same places. After teasing the poor fellow into an offer of half his capital for the two roots, he let him into the secret of making any flower striped for a few hours, and with a bunch of lighted matches, which discharges the colour for a time, changed some others before his eyes, and spoiled in a single instant all his golden dreams. As an instance of how much a decided improvement is valued, I will mention a well-known fact:—A man named Cox sold a yellow Dahlia called *Defiance*, for 150*l.*, the buyer sold it again for 250*l.*, and the last buyer made 1,500*l.* clear by this one Dahlia. *Geranium*.—How long is it since the only kinds we heard of or saw, were the old scarlet, the oak leaf, the ivy leaf, the horse-shoe, and some others, with the most insignificant flowers, all the varieties of which could have been had at 6*s.* per dozen, but by the same perseverance which produced the *Golden Pippin* from the *Crab*, we have now hundreds of superb varieties, many of them advertised at one, two, three, and five pounds per plant. The changes were produced by the same means, saving seed from the best flowers, throwing away the worst, and so progressing by degrees, until varieties worth perpetuating, made their appearance, and were propagated; year

after year the same perseverance is still used, and the produce is better than the last. We next come to the *Pansy*, a subject which not many years ago existed only as a weed, called, among other names, *Love in idleness*. This little insignificant flower, said Mr. Glenny, holding up the original weed, is the parent of the beautiful collection of flowers now before you, and of ten thousand others. These are the result of the florist's perseverance; and if we had to do the work all over again, the process is slow, but certain. Let this small plant be placed in good soil, the seed be saved and sowed, among the seedling flowers will be found some a trifle larger, throw the rest away, and save none but such as are better than the parent. From the seed of these improved varieties still better will come, although ninety-nine out of every hundred may be worse. Thus from year to year, with the perseverance of a florist, may a plant be improved, until we attain whatever we want. When I, said the lecturer, first knew *Heartsease*, this was the character, (handing about at the time a diagram of the original form,) and when I ventured to say that flower should be round, I was laughed at; nevertheless, it was not many years before I produced one myself, and the laugh went the other way. After some passing remarks on *Calceolaria*, *Cineraria*, *Ranunculus*, *Cactus*, &c., the lecturer continued—There is, in short, no pursuit more gratifying than the cultivation of flowers. Every novelty produced, that is worth keeping, may be distributed all over the civilized world in a short time, and if it be really valuable, will be so. The flowers we tend afford us delight, as we succeed in maintaining them healthy; our anxieties are awakened if they do not succeed; we feel excited in our pursuit, and the only subject of regret is, that if ladies are ever concerned in the management of plants, they kill them with kindness; lest they may be thirsty, they drown them in saucers of water, though sometimes people suspect that the saucers are placed to save the tables. Ladies, said the lecturer, I could wish to influence you in behalf of cultivating flowers. I would have you all turn florists. Nothing could be more delightful than the sowing of seeds, and watching for the development of new varieties. Those who have not a garden, I should like to see cultivate plants in pots; they are elegant ornaments to a drawing-room, and may be easily kept in perfection; but how many of you have given a plant six times as much water as it required, and fancied that would make it amend for going without all the rest of the week? If you have any regard for plants in dwelling-houses, throw away the water which runs through into the saucers ten times a day, rather than let any remain there, for if cruelty to plants be punishable as cruelty to animals, you would be arraigned before a coroner's inquest, and the verdict will be either "killed with kindness," or

"died by the visitation of the ladies." If plants in pots are doing well, they require new pots and new soil the same as if out of doors. When they are bought at nurseries they are generally at their best, and all that can be expected of them without new pots is their bloom. Nevertheless, it may make some months difference in their period of existence, if their kind mistresses guard them as they would their husbands and sweethearts; for rest assured, that plants suffer as much as mankind from an excess of drink. Never let the plants be too wet, and avoid keeping them dry, the one is as injurious as the other, and it is impossible to form an idea how few plants die in London from any other cause than watering too much or too little.—The lecturer, with a few further remarks, concluded amidst the hearty applause of the audience.

PRESERVATION AND PREPARATION OF MANURES.

IN the nomenclature of agriculture we have two sorts of manure, natural and artificial. By the former, we mean simply a return to the soil of vegetable substances, in various states and stages of decomposition; by the latter, the application to it of animal and marine substances, or of other earths possessing different qualities from that upon which, to use a medical term, they are exhibited. This definition does not, perhaps, strictly delineate every shade of the distinction between natural and artificial manuring; but sufficiently so (in the absence of a better) to present that distinction clearly to the mind, without which the subject cannot be theoretically discussed, or practically experimentalised upon with any certainty of our keeping in what Bacon calls the "straight path of discovery." To what new sources of improvement that path may eventually lead us, as regards artificial manuring, it is impossible for the most sanguine to tell, because it has as yet been very inefficiently explored. Indeed all our discoveries on it have been the results of mere accidental observation, not of predetermined research; and may be considered as no more in comparison with what may be expected from such research, scientifically and industriously prosecuted, than the few grains of precious metal which the Indian peasant casually picks up in the bed of the stream, compared with what may be extracted from the bowels of the mountain from which it runs. The same union of philosophical and practical knowledge by which the mineralogist and engineer have literally opened veins of inexhaustible wealth, may some day be metaphorically used to the same purpose by the chemist and agriculturist, in extorting from nature her secrets of fertilization by artificial manures. At present we know little more than what she by chance presents to us on the surface. With the

natural manures it is different. From the time when agriculture became fixed—that is, since the cultivators of the soil, being no longer able to range at will in search of fresh land, became stationary on particular tracts, and were compelled to search for the means of repairing the exhaustion of continual cropping—from that early time, what we call natural manuring has been practised; and it would be strange if, after centuries of observation, the properties of the various substances used in this way, deleterious as well as beneficial, according to the soil to be invigorated, were not properly understood by every farmer possessing moderate judgment and information. Still has the *preservation* and *preparation* of these simple substances been strangely neglected, even in our own age—even in our own country—and even by the most careful and intelligent farmers amongst us. By the preservation of them we mean the preserving and promoting their fertilising powers. Into how few farm-yards can we go without at once perceiving that to the management of a manure-heap no attention whatever is paid, except, perhaps, when a hand happens to be unoccupied, it is employed to *tidy it up*, and that, not out of any care for the manure, but for the greater spaciousness or cleanliness of the *yard*. Indeed, there are many farmers who, if you were to name such a thing as the *management* of a manure-heap, would laugh at you in your face as a finical and whimsical pains-taker. It is, however, a point not only of mere economy, but of the greatest consequence to the productiveness of the farm. The fertilising power of manure does not lie in the *name* of it; it acts upon the soil and upon the seed by chemical properties, and those of the most subtle description. It also, in its progress towards that state which renders it most fit for the field, acts upon itself; and the degree of its excellence must in a great measure depend upon this action being properly sustained; whereas, in a manure-heap carelessly thrown together, the action in one part is violent to destructiveness, and in another does not take place at all. It can no more be said to enjoy a healthy fermentation, than a man to enjoy a healthy warmth of vitality, one part of whose body is in a state bordering upon spontaneous combustion, and another cold to congelation. Take, for instance, stable-manure, and the too prevalent practice with it—the ordure and wettest portion of the litter are thrown by barrowsful into one part of the heap, and the dry litter into another, instead of both being carefully intermixed, and are thus left in little aggers on the top, instead of being evenly spread in layers day after day.

Well may it be a trite proverb, when speaking of any thing badly prepared, that "you could chuck one like it together with a pitchfork," for the pitchfork in the hands of an idle

groom chucks together such an ill-assorted heap, as may well be a type of every thing in which good materials are spoiled by bad handling. The volatile salts, so abundant in the animal rejections, are necessary to the reduction of a straw, and it is only by a proper construction of the heap that they can be retained in it, or duly dispersed through it. Constant neatness does not in the end create much additional trouble; but what if it did? Upon a moderate sized farm, if a man were employed the half of every day throughout the year in doing nothing but attending to the manure, the expense would be insignificant compared with the increase of produce which would be the consequence. Every farmer reasons with himself upon this principle in other respects. Why does he go to the expense of boning? Why does he think nothing of distance to procure the purest lime? Because the better the manure, the more heart he puts into his land, which he knows will gratefully repay him for the trouble and cost. Yet this maxim he too frequently forgets, when he looks into his own yard, and passes by that permanent manure (which, more than any artificial manure, gives an enduring staple and stamina to the soil), withering, spoiling, and alternately desiccated or delayed out of its strength, merely from the want of just as much trouble as would keep it even and neat.

With respect to the *preparation* of manures, the simplest, and perhaps the only practice yet pursued, is the interposition of lamina of fat earth, and other similar substances, between successive layers of manure; but it is evident, on the slightest reflection, that the admixture of the artificial with the natural manures offers a wide field for experiment—a subject which we must reserve for a future paper.

WEEKLY JOURNAL OF GARDENING.

AMERICAN Plants, especially *Rhododendrons* and *Kalmias*, in pots, are now making growth. These, if allowed to want water, will be checked, and it will prevent their setting well for bloom next year. Let them be well drenched, and the sun should not reach the pots when powerful.

CAMELLIAS also, and most *Greenhouse Plants*, suffer more by want of water at this period than at any other, though it is always mischievous.

In watering **DAHLIAS**, which ought before now to be all planted out where they are to bloom, care should be taken to do it well, but not often. The ground all about them should be well soaked, but when they have once got well hold of the ground, they should not be wantonly watered.

FLOWERING SHRUBS and **EVERGREENS**, which are, now growing fast, should have all straggling branches cut in, that the new growth may be well formed.

ROSES which are grafted now throw up suckers and side shoots from the stock: these should be watched and taken off before they make growth, as every leaf's growth weakens the head; suckers should be taken off as close to the root as possible.

ROSES may be now budded with advantage.

It ought to be the invariable custom to bud all *Roses* on the dog *Rose*. In many nurseries it has been, and is the custom, to use any sort of free-growing *Rose* with which at the time they may be overstocked; independently of the unfitness of these stocks, as they seldom live long, one is apt to be deceived by the suckers they throw up, being like the graft, and not to be distinguished from it but by a very nice observer; consequently the plant is ruined before you are aware of the cause. In France they use the damask *Rose* for this purpose, which is open to the same objections, as its suckers are so insidious that many a good perpetual *Rose* worked on this stock has fallen a victim. Therefore, let all those who buy grafted *Roses* stipulate that they are on the dog *Rose*; as its robust and thorny suckers are apparent to the most casual observer.

CELERY may have a little earth filled into the trenches where the plants are far enough advanced. It must, however, be done on a dry day.

WEEDS grow rapidly in Turnips, Onions, Spinach, and all small crops, and unless taken away injure them greatly; hand weed, therefore, or hoe pretty constantly, until the crop is too much advanced to be hurt.

CARNATIONS and **PICCOTEES** should be attended to daily, as they make rapid growth, and unless their ties are examined occasionally, and removed or loosened, they will catch, and perhaps break. Any that are too forward for showing should have the leading buds removed, they being useless; the only chance is to depend on the laterals coming strong enough, which they frequently will if the principal pod or pods are removed in time, because all the strength of the plant goes to nourish them.

Take off the tops of **BROAD BEANS** which are blooming, it checks the growth of the plant, and promotes the setting and swelling of the pods.

Do not depend upon even heavy rains for watering small plants in borders and shrubberies. It frequently happens that the foliage of larger shrubs or trees completely throws off the rain in particular spots, and whatever is there will suffer even in wet weather.

Daily examine all **GREENHOUSE PLANTS** out of doors, that they want not for water or pot-room. See also that the drainage is clear at the bottom.

Look well after **APHIDES** in all sorts of plants, and if they are moveable, take them to any confined room the moment they are affected, and

fumigate them with tobacco smoke; remembering, that unless the place is completely filled with the smoke, so as to penetrate every nook and corner, and drive out the common air, the trouble will be useless and the time lost.

Tie and train all CLIMBING PLANTS, for if once allowed to ramble, they can never be placed so well as if regularly guided, tied, and trained.

Tie up to sticks all the tall SLENDER FLOWERING PLANTS in the borders.

HEARTSEASE, that are inclined to grow lengthily and straggling, should be stopped and cut back before they get too bad; they will continue to break out and flower.

June 24, 1843.

STRAWBERRIES.

WE everywhere read that September is the month in which beds and plots of Strawberries can be most successfully planted. This is true, though the assertion is somewhat too general; it is one thing to remind a person of a duty, but quite a different affair to instruct him how to perform it as he ought. Much depends upon the weather, and the temperature of the soil and atmosphere, the season is just *that* wherein enough of the exciting influences of summer remain to cause the development of active roots; the nights, after a powerful sun, are moist and dewy, and the ground is mellow and tractable, in consequence of the last seasonable rains.

A great difference of opinion prevails respecting the constitution of the strawberry-plant, some asserting that it may remain in one spot of ground for many successive years; while others contend that it deteriorates after the first year of fruiting. A writer in the *Quarterly Journal of Agriculture* appears to ground his opinion of the necessity of removal, from the wandering nature of the plant, and the faculty it possesses of sending out runners attached to long strings, in quest of fresh pasture. Many facts seem to bear upon a subject, and to justify a theory, which, after minute investigation, are found to be illusory; and certainly we have observed strawberry beds, the plants of which, though fixtures of many years standing, yield fruit in so much abundance that it is gathered by the stalk, not singly, with six or eight fine berries in the bunch (or cyme). There are several methods by which beds or borders may be formed with great facility at this season; whereas, had the old practice of planting small rooted runners in July been adhered to, certain failure would, to a great extent, have been inevitable. The ground ought, if possible, to be fresh, or that lately occupied by a vegetable crop; and be digged and manured to the depth of two good spits. But it sometimes happens that strawberries occupy *all* the borders, and no other part of the garden; and in that case nothing more can be done than to remove about

one-fourth part of the stock yearly, turning and manuring the soily deeply, reversing its surfaces, and crossing the varieties, planting the Elton after the Keene's Seedling, the Old Pine after the Chili, and so on. The best plants for new beds, &c., consist of the large, full-rooted earliest runners of July, moved with a ball of earth adhering, because all the roots being white and active, no loss of time will be occasioned. The next best method is to turn out the finest of the spring-forced plants, shaking off the drainage, and detaching decayed leaves and flower-stalks. The third, and one much condemned, but which we know may avail to effect two good objects, is to transfer old roots with the runners adhering, and planting them a yard apart, in line. The plants should be digged up, in thinning order, from border rows, or beds of approved varieties (and we decidedly recommend the *Old Pine*), leaving the plants remaining with a clear space around each, to which fresh *maiden loam*, mixed with one-third of good *linings manure*, should be applied: this will furnish new pasture for the plants. Those removed should be cleared of the old woody root, and inert leaves, then planted rather deeply, and copiously watered, pouring the water in a forcible stream to puddle the soil into close contact with the roots. The rooted runners remaining on the string, are then to be fixed in the soil at equal and regular distances between the parent plants, and the earth levelled and brought close up to the collar. If the weather continue dry, two or three afternoon waterings will be useful. The strawberry plant protrudes new roots above the old ones, and annually loses all the lower roots, which become black, hard, and woody. The art of the gardener, therefore, is successfully exercised by carefully removing the surface soil at or before the spring dressing, and supplying fresh earth in increased quantity. Thus beds may be retained for years; and if the plants stand in rows two feet asunder, it will be very easy, by digging between them, and by removing plants which crowd others, to maintain regularity of position, and a due supply of fresh earth. Many persons make it a rule to take off all the blossoms of the first year after planting, and strength is gained thereby; but, whatever plan is pursued, not one leaf should be cut till the period of spring dressing; though after the runners have been selected, it will be very proper to clear away the incumbrance occasioned by these supernumeraries.

STRAWBERRIES IN POTS.

It is everywhere the fashion to force "*Keen's Seedling*," and we admit that the fruit is early, rich in colour, large enough, and abundant; but if we come to speak of flavours, the *old pine*, above all, the Elton and Downton, and perhaps Myatt's new pine, beat it, beyond a question. We have seen the old pine force well in 24-sized

pots, plunged to the rims in old tan or leaf-screenings in large pits, heated either by linings or fire; and the blackbirds appeared to entertain the same opinion with ourselves that the fruit was passing good, seeing that they entered by the open lights, feasted at their leisure, and flew off only when the sashes were to be moved to inspect the fruit. But we are not writing to insist upon this or that variety, nor to urge the gardener to adopt any new one at our suggestion: all that we shall say upon the point of quality is simply this:—our pines (six years in the ground) have borne as well, or better, than the “Keen’s”—have ripened not a week later—have been incomparably fine, and so much so, that a decree has gone forth to extirpate whole ranks of the latter in favour of the former.

This article is designed to economize the time and labour of gardener or amateur, by suggesting a plan which we know to be successful, and would that we felt at liberty to write down the name of the party who showed us his stock of plants in pots! But names are occasionally sacred reminiscences, or otherwise, in this instance, few would fail to acknowledge the skill of the gardener to whom we could refer. The *same plants* may be, and have been, *forced* above *five years*; the crop *always good*, never failing. All that is to be done is, in mid-August, after the pots have been preserved from the full sun, and the plants kept sufficiently moist, to shake off the soil, and trim away the black torpid roots, leaving those of a paler colour, which are attached to the new system of leaves, entire. The soil used is sound, unctuous loam, mixed with one-third part, or thereabout, of half decomposed linings: an inch stratum of drainage in each pot is useful. The old brown leaves are cut away occasionally, and three plants are placed in each broad 32, or proper strawberry-pot. All the pots are plunged to or over their rims in coal-ashes during the winter: but we think that a cold frame would be preferable; for who knows how speedily they may again be saluted by 34 or 36 degrees of frost?

PROPERTIES OF THE CALCEOLARIA.

It was a curious coincidence that Mr. Green's notions of the properties of the Calceolaria should coincide with those of a correspondent who furnished the treatise on the flower, and that Mr. Glenn's paper on the properties, which we purposely inserted the same week, should have contained a quotation from Mr. Green's opinions for the express purpose of contradicting or opposing them. We have, of course, no doubt as to the correctness of Mr. Glenn's notions, for we believe few, if any, have gone into the subject so scientifically, or founded opinions upon more clearly defined principles. The author of the treatise on the Calceolaria has written us a letter containing

some pertinent remarks. He says in one part:

“Mr. Glenn says (p. 130, col. ii.) the error which people fall into in settling the points in a florists' flower is that they are *guided by what has been done*, INSTEAD OF WHAT WOULD LOOK THE MOST HANDSOME.” I have no hesitation in admitting that my *taste* on this point has been formed from the most elegant forms *already brought out*; and in condemning the globular shape, I did so from having seen many semi-globular blooming plants, which, from having flowers with heavy lips or tops, looked detestable; and certainly the reverse of symmetrical. If such blooms as you have figured at the head of the article *can* be produced, I freely grant they must look elegant; but the work of impregnation, I fear, must be begun anew with some of the original species in order to secure them.”

We see no difficulty in encouraging round blooms instead of flat ones; and certainly Mr. Glenn's figures leave no doubt upon the mind as to which is the best form, presuming it to be attainable; and his doctrine is, that it matters not whether it be attainable or otherwise, that which comes nearest is the best.

GARDENERS AND OURSELVES.

THERE is no class of men in the United Kingdom whose power and influence would be greater than that of the horticulturists, if they made the best use of it. Practical gardeners, down to the most humble, are thinking, reflecting men; their business requires forethought and freedom. They acquire the habit of thinking. They have leisure as the winter evenings advance to put their thoughts together, and they have in this Journal the means of communicating one with the other. From the lowest to the highest there is a succession of links which form a chain of no ordinary strength. From the prince who delights in his garden, to the peasant who labours in his, there is a general good feeling, which might with the greatest ease be all brought to bear towards any one subject, and there requires but the *esprit du corps* to make the whole form one compact body. We have done our part towards creating this. It is by adopting one organ of communication that more is to be done than by any other means that could be devised.

It has been our aim to fit this to the very highest class of readers, as well as to practical men; and we would have every man who had aught to communicate to those interested in horticulture, to adopt it as his medium. The value of any organ consists in its completeness. If a man can take up a work which contains everything of importance connected with the science he pursues, it is infinitely more valuable than the most distinguished literary work which contains but a part, though it may have all that can

charm the scholar and the gentleman; and hence it is that *The Gardener* is far before the most expensive work on botany, because, while the botanical work conveys the intelligence to its five hundred readers, we convey it to those same five hundred, and to some thousands who look no where else for such information. However, whether we have the happiness to be the universal organ or not, we recommend union of sentiment—union of principle—union of purpose; whatever tends to advance horticulture, enhances the value of every man's garden, and of all its produce. The employer thus obtains a return for his expenses—the gardener obtains credit for his exertions, and the science prospers in proportion to the satisfaction of the employer and the employed. Let each individual, then, who can render a service to his fellow men, by telling what he knows, tell it where it must reach the greatest number.

THE GARDENER'S NOTE-BOOK.

ON RAISING NATIVE HYACINTHS.—The plants which have flowered in glasses or pots, produce better offsets than those raised in beds; these, together with the mother and now reduced bulb, plant at the usual season. The old bulb affords considerable nourishment to the young plants, which rise with great strength the following spring. When the leaves assume a yellow hue the plants are to be taken up, and replanted the same day in prepared beds; the stronger by themselves. The strongest plants will show blossoms the following spring, some of them having from twelve to twenty bells, or pips; these should be reduced to three or four, which should be left on the extremity to draw up the sap. Were the whole suffered to remain, the plant would be much exhausted in flowering; and if wholly taken off, it receives a great check. The bulbs are again to be taken up in October, and replanted as before, not permitting them to remain any time out of the ground. Moisture seems essential to the perfection of the hyacinth; and I find that those which remain in the ground, and of course subject to its influence, are not at any time affected with the ring disease, by which many of those which are placed in the stove are lost every season. The compost best suited for them is, one barrowful of loam from rocky places, one ditto well rotted cow-dung. This should, if possible, be three years old; one third of a barrow of mould, produced from rotted tree-leaves, and about a fifth of a barrow from an old cucumber-bed. With this the bed is to be made two and a half feet deep, and the surface covered with turf-mould, to preserve the bulbs from frost.

BONE DUST.—The following facts have been ascertained by numerous experiments:—1. That crushed bones remain in the soil for a length of

time proportionate to the size of the pieces; the dust producing the most immediate effect, the larger pieces continuing to show the longest advantage. On arable land their good effects continue for four years; on pasture land for eight. 2. On turnips, oats, barley, and wheat, the quantity applied has been from twenty-five to thirty bushels per acre; on pasture land from twenty-five to forty bushels of bone dust, early in the spring. 3. The best mode of application is by the drill, with the seed corn. 4. The bones should when first used be always applied, for the sake of correct information, in varying quantities per acre; and on no account should the farmer omit to leave, by comparison, a fair portion of the field without any manure.

MILDEW.—The American farmers effectually prevent the *blight* or *mildew* from injuring their orchards, by rubbing tar well in the bark of the apple-trees in the spring seasons: this is done about four or six inches wide round each tree, and at about a foot from the ground. Abundant crops generally follow this treatment.

THE FLY IN TURNIPS may be prevented by dividing the seed intended for one day's sowing into two equal parts, and putting one part to steep in a vessel containing soft pond, or ditch water, the night previous to its being used. Next morning mix the whole together, and add to each pound of seed two ounces of *flour sulphur*. This mode will ensure two successive growths, and the fly will not touch them. It has been adopted with success for many years by the intelligent farmers in the south-west of Scotland.—*Silurean*.

TO PRESERVE PARSLEY IN WINTER.—This excellent herb may be preserved through the whole season, and in every climate, by the following simple process:—pull or cut your parsley when full grown, hang it up to dry, and when wanted for use rub a little of it betwixt the palms of the hands, put it in the pot, and it will immediately resume its smell, flavour, and colour, although it may have been kept for years.

SPADE HUSBANDRY.—The following statement was made at the late scientific meeting held at Liverpool. A farm of 317 acres, belonging to Mr. Mitchell, Norfolk, was cultivated with eight horses and twenty men, under a system of spade husbandry, which had required twelve horses and twenty men with the plough, and the general results were, better wages to the workmen, and an increase of one-third in the produce of the farm. Mr. Mitchell attached a garden of a quarter of an acre to each of the men, from which they derived a profit of £3 3s. a year. Sir Edward Kerrison, in Suffolk, had made 200 such allotments, which were sought after with avidity. The rents were paid with great regularity, and the improvement in the condition and character of the cottager was very manifest.

THE POISON TREE OF JAVA.—Mr. Loudon, in a letter to Dr. Horsfield, the botanist, states, that he determined to visit this fatal valley, which Dr. Horsfield, when resident at Java, had not been able to do, for the natives could not be prevailed on to conduct him to the opening. Early in the morning of the month of July, Mr. Loudon, accompanied by the commandant of the district, Mr. Strendenberg, and Mr. Darnelds, left the village of Batier for Guwo Upas, the Poisoned Valley; they took with them two dogs and some fowls, to try experiments. On arriving at the foot of a mountain, they dismounted and scrambled up the side of a hill, fully a quarter of a mile, holding on by the extended roots and branches of trees. When within a few yards of the valley, they experienced a strong, nauseous, sickening, and suffocating smell, but, on coming close to the edge, the smell left them. They were then lost in astonishment at the awful scene beneath them. The valley appeared to be about half a mile in circumference, oval; the depth from thirty to thirty-five feet; the bottom quite flat; no vegetation; a few large (in appearance) river stones, and the whole covered with the skeletons of human beings, tigers, pigs, deer, peacocks, and all sorts of beasts and birds. The sides of the valley, from the top to the bottom, were covered with vegetation, trees, and shrubs. It was now proposed to enter the valley; they lighted their cigars, and, with the assistance of a bamboo, went down within eighteen feet of the bottom; there they did not experience any difficulty of breathing, but a sickening, nauseous, smell. They fastened a dog at the end of a bamboo eighteen feet long, and sent him in; they had their watches in their hands: in fourteen seconds the dog fell on his back; he did not move his limbs, or look round, but continued to breathe eighteen minutes. They sent in the other; he walked to where the other was lying; he then stood quite still, and in ten seconds fell on his face, and never moved his limbs afterwards; he continued to breathe for seven minutes. They threw in a fowl; it died in a minute and a half; another died before touching the ground: a heavy shower of rain fell during these experiments. There was no smell of sulphur, nor any appearance of any volcanic eruption ever having occurred, though there are two craters at no great distance emitting smoke.—*Dr. Sigmond's Lecture in the Lancet.* [All this is highly picturesque; but it is, nevertheless, all fudge.]

COMFORT FOR DAHLIA GROWERS.—Stalks of chamomile (*Anthemis nobilis*) tied round the flower stalks of dahlias will prevent earwigs from eating the flowers.

PRESERVATION OF THE VINE.—The following mode of killing the worms which prey upon the vine is said to have been adopted in France with success. By placing a number of lamps in well greased dishes among the dishes, thirty

thousand moths of the *Pyrale* species were destroyed in one night.

THE ADVANTAGES ATTENDING THE CULTURE OF HARDY ANNUALS.—The regularity and neatness which constitute good keeping in the flower garden, however desirable they may be in other respects, tend to do away with many of those invaluable plants called hardy annuals; because their reproduction from self-sowing cannot take effect when high keeping is adhered to. The suitableness of these annuals to the climate of this country, when sown in autumn, or permitted to sow themselves, is such as to render them truly useful. As we do not consider groups of such plants, when in a state of maturity and in seed, in character with the good keeping which is necessary at an early period of the season in the flower garden, it will be indispensably requisite to have a piece of ground set apart for the growth of such, where they will remain permanently; and which will prove a store garden, to which the gardener may resort when plants are wanted to produce certain effects; such, for instance, as a show of flowers, previous to the summer flowering plants coming into blossom. But, notwithstanding their subtleness for a spring show, many of them will continue flowering pretty well during the summer months. The following list contains a few of the plants recommended:

| | |
|-------------------------------------|---|
| <i>Enothera Lindleyana</i> , purple | <i>Collomia linearis</i> , red |
| <i>albicans</i> , white | <i>Nemophila insignis</i> , blue |
| <i>decumbens</i> , purple | <i>Collinsia grandiflora</i> , blue and white |
| <i>viminea</i> , purple | <i>véna</i> , blue and purple |
| <i>Clarkia pulchella</i> , purple | bicolor, pinkish |
| <i>elegans</i> , pinkish purple | <i>Leptosiphon densiflorus</i> , lilac |
| <i>Gilia tricolor</i> , whitish | <i>androsæceus</i> , lilac |
| <i>achilleæfolia</i> , blue | <i>Chryseis</i> (<i>Eschscholtzia</i>) |
| <i>Madia elegans</i> , yellow | <i>crocea</i> , orange |
| <i>Collomia grandiflora</i> , pink | <i>californica</i> , yellow |

LIST OF PLANTS SUITABLE FOR A FLOWER GARDEN, NOT LIABLE TO BE EATEN BY HARES:—

| | |
|---|-------------------------------------|
| <i>Tropæolum majus flore pleno</i> | <i>Nieremburgia calyina</i> |
| <i>Verbena Sabiniæna pulchella</i> | <i>Salvia chamædrifolia fulgens</i> |
| • <i>venosa</i> | <i>Grahami</i> |
| • <i>chamædrifolia</i> (<i>Melindria</i>) | <i>Senecio elegans</i> |
| <i>Bouvardia triphylla</i> | <i>Kaulfussia amelloides</i> |
| • <i>Heliotropium</i> sp. | <i>Mahernia pinnata</i> |
| <i>Calceolaria salvisfolia</i> | <i>Petunia nyctaginiflora rosea</i> |
| <i>thyrsifolia</i> | <i>prænitens</i> |
| <i>rugosa</i> | <i>phœnicea</i> |
| <i>angustifolia</i> | <i>blanda</i> |
| <i>Enothera macrocarpa</i> | <i>Mimulus roseus</i> |
| <i>Pelargonium optabile</i> | <i>Isotoma axillaris</i> |
| <i>Daveyanum</i> | <i>Alonsoa linearis</i> |
| <i>pavonicum</i> | <i>acutifolia</i> |
| <i>Black Prince</i> | <i>Cineraria amelloides</i> |
| <i>Fairy Queen</i> | <i>Fuchsia globosa</i> |
| <i>Scarlets</i> in var. | |

GERANIUMS.—It is astonishing to those who observe the different growths of different cultivators, how the Geraniums alter their character.

We have seen some flowers that we have condemned altogether, for roughness and looseness; which flowers, under other culture, have been almost all that could be wished, and hence the danger of condemning, or approving too rashly. Before the buying season comes we shall have made up our minds to a few that ought to be grown by everybody.

CUT FLOWERS.

THE love of flowers is gaining ground in England as much as it has been advancing in France, where the produce of cut flowers, sent to the various markets, has been for some years enormous. In our opinion there can hardly be a more elegant embellishment to the drawing-room or the parlour, than a handsome nosegay or a tasty bouquet. There are thousands now among the middle classes who have their regular supply of flowers for that purpose; and the fashion cannot be too much encouraged. Those who have choice small bouquets, should place the little vase or glass in the middle of a plate of water, and whenever they leave the room, and especially at night, they should cover them with a glass shade, or inverted jar, or any thing airtight, with its edges in the water. This prevents evaporation of the juices of the flowers, and they last for several days longer. A glass shade is the best, because it does not look unsightly; but, of course, when company are in the room, and the perfume, which is the great charm attached to flowers, should be enjoyed, the glass must be removed. It is of use to those who have small expensive bouquets, but ordinary flowers are too cheap to be worth the trouble. Much may be done towards prolonging the beauty of ordinary nosegays, by taking them out of the water every morning, cutting the stems a trifle shorter, removing the overblown flowers, and giving them fresh water; we should like to see every house in town have its nosegay, as one of the proofs of the taste of its inhabitants. Plants and flowers in pots, too, are among the ornaments which seem to give brilliance to a house; and if they were taken care of, they would last season after season, in London, with all its smoke. They should be watered regularly; and be either kept without saucers, or the water thrown away out of the saucers as fast as it runs through, to do which is the best after all; or, the patent pots and stands of Hunt's should be used, as we have directed in a former number.

The above is from the *Gardener's Gazette*; but we shall shortly return to this subject, and give some designs for flower vases with glass covers, which will be an improvement to the plan here suggested.

GARDENING FOR JULY.

DAHLIAS.—Take cuttings of choice varieties. You will frequently find a shoot or two coming

from the bulb or tuber. Bare the soil to the bulb, and cut off the shoot thus:—



If there be none, you must select young side shoots which have not made more than three or four pair of leaves; cut the top shoot and two pair of leaves off, leaving the lower pair on the plant.



Take off the bottom pair of leaves with a sharp knife, and it is ready.



Place these cuttings round the sides of a pot, giving them good bottom heat in tan, or a cucumber frame, with a hand glass close down over them, and they will strike, but if you take older cuttings they will in all probability fail. As your seedling Dahlias come into bloom, throw away every one that shows a pointed or a notched petal, or that is not double. Save only those which have plenty of petals this shape:



for if a petal be a bad shape, it cannot well make a good flower, and the bad ones should be pulled up and thrown away as fast as they develop this imperfection.

Disbud CARNATIONS and PICCOTEES; leave four of the best on each stem, that the worst of the four may be removed hereafter. When the pod is nearly bursting, tie a piece of matting round the bud half way up it, and when the end

opens, carefully pull down the five divisions of the calix to the basstye. The bloom thus freed will open even; place the guard petals the instant they come down, and where it is practicable continue placing the petals as they advance. The guard petals should be made to form a circle as nearly as possible; the next row of petals should be brought down to cover the places where the under row of petals meet, and should be the next largest in size; so also with a third row, and the remainder may form the crown of the flower. The advantage of dressing as they advance is, that they grow into their places, and no temporary dressing for the occasion at all approaches this mode for effect; indeed, if flowers are permitted to bloom without dressing, hardly any art can place the petals in the order they should exhibit; they get bruised and damaged, and instead of looking fresh, crisp, and firm, all the science in the world cannot prevent them from looking flabby and stale. With regard to layering the young shoots, the better way is to begin with them as soon as they are long enough, and not to delay all the collection till all are ready, but this is rather a matter of convenience than propriety, for it is of little importance as to whether it is done a few weeks sooner or later, so it be done in time to get well rooted; generally speaking, it is well to complete all the layering between the first and last of July. In choosing flowers for a stand, select for form in the first place, variety in the second, size the last; let the flowers in each row match, the largest in the back row, the next in the middle, and the smallest in front; yet of all the flowers that are exhibited there are none in which size so runs away with the fancy of the judge. Too often a large beast of a flower, as ragged as a colt, would beat a small, compact, well-formed bloom, but this ridiculous and vulgar fancy is rapidly passing away.

AURICULAS should be carefully looked over, the dead leaves picked off, the seed gathered as it ripens, the drainage examined, and all that require it should be re-potted. In doing this the mould should be shaken out, the root examined, and if necessary reduced, particularly if there be any appearance of decay, every symptom of which should be cut away. This operation is performed at different seasons, but at this time and all July is good, because it effectually checks all disposition to bloom in autumn; where plants are not re-potted they are almost sure to throw up blooms at the fall of the year, and nothing so completely stops it as re-potting in July.

HEARTSEASE require shading from the heat of the midday sun, and those who wish as amateurs to excel in exhibitions should be constantly striking and planting out succession plants. It is notorious that the early blooms of such cuttings, we mean the blooms which come im-

mediately after the plants are established, come by far better than those which follow in abundance. By constantly watching favourite varieties you may take side shoots before they are two inches long, some even from underground, with the roots almost formed. These become plants early, much earlier than pieces taken from the strong stems, and bloom much stronger. Heartsease require to be skreened from wind more than any other flower. Scores of plants exposed to the wind go off in an hour, and the owners attribute the destruction to every thing but the right cause; the plant depends on a single stem just above the ground, but it spreads its shoots upon the surface, and when the wind blows the plant on one side the slender stems too often break, and although not completely detached they must die. The wire-worm, grub, and fifty other causes are assigned, but the real one is the breaking or bruising of the main stem close to the earth; a high wind will sometimes destroy scores of plants in a comparatively small bed, and if it occurs in the night, when the stems are brittle from the dews, which freshen them up a good deal, it is infinitely more fatal than in the heat of the day, when they are more or less limp and tough. And what is more, the discovery of the mischief is in the morning, when the plants are found prostrate and dead.

Take up your best beds of **TULIPS**; if you have room and convenience put them into boxes, with all their skins and roots, and place the drawers singly in an airy dry covered place, out of the sun. In a few days they will harden, the skins will come off easy, and the root break away without damaging the bulb. Should any in taking up be found with moist or mildewed skins, which is not unfrequently the case, they should nevertheless be let alone a day or two; the removal of the skins, stalks, and roots, is accompanied with much less risk. It is not uncommon for part of the top to come away with the roots, if the latter is broken off at the time of taking up; it is better to take them up in temporary boxes at first, so that, as they are cleared of their skins and roots, they may be laid away in their own drawers perfectly clean, which is not easily done if they are taken out to clean, and returned to the same place, because there will be grit and mould not easily got rid of. Tulips when put away should have air, without heat or much frost; an outhouse of any kind is better than a dwelling-house. There should be a vacancy between all the drawers, and the case all round should have wire panels, sides, back, and front.

RHODODENDRONS and **AZALIAS** require abundance of water while they make their growth and set their bloom for the next year. There is no reason why they should ever fail, although there prevails a pretty general notion, that if there is abundance of bloom one season there is not likely to be any the next. That in

the ordinary way it does happen so, unless care be taken, is true enough, but it arises from this cause: the great abundance of oblong so mono polizes the juice of the plant, that unless it be amply supplied with water it is very much exhausted; the new growth cannot progress until the bloom is off, and then for want of ample nourishment it is stunted and imperfect. The next season having no bloom to support, it commences growth early, and perfects it soon. The bloom or no bloom depends entirely upon the completion of the growth of the branch, the end of which forms the bloom bud, so that, in fact, this description of plants neglected, generally bloom well every other year; but if they be liberally watered during the bloom and afterwards, they will perfect their growth, notwithstanding they may have bloomed finely, but even then the growth will be accelerated by removing the seed pods.

VINES.—Stop all the shoots which have fruit on them, by breaking them off one joint beyond the last fruit, and take away all the lateral shoots. Thin the bunches, to give the fruit room to swell; and where they run heavy, with good shoulders to the bunches, support the shoulders by tying them up with matting.

The **RED SPIDER**, which attacks almost every thing in turn, must be got rid of by syringing under the leaves with soap suds and plain water, or dusting the under sides of the leaves with sulphur, or syringing with sulphur and water; all may be tried with perseverance and success.

DESTROY CATERPILLARS ON GOOSEBERRY TREES.—Take a large basket full of elder leaves, boil them in as much water as will cover them, until the liquor becomes quite black (which will require three or four hours), then clear and cool it, and to every two gallons of liquor add one gallon of tobacco water: lay it upon the trees with a fine water-can when they are quite dry, and in ten minutes the caterpillars will fall off.

Plant out **TOMATOS** against a bank or brick wall.

Sow **CABBAGES** the last week.

Sow also **CARROTS**—Radishes for autumn crops—the salmon or scarlet kind.

BROCCOLI.—Plant out for winter and spring supply.

Finish planting **SAVOYS**.

Transplant **CELERY** for the main crop—earth up all that already require it.

Earth up **CELERY** on dry days, being careful not to fill the heart of the plant with the soil.

Sow **KIDNEY BEANS** the first week for the last crop.

Sow Winter and Spring **ONIONS**, and to provide against the worst winter, sow also Welsh Onions, which, although they never bulb, are useful in sauces, salads, or when all other kinds are killed by frost.

Transplant late crops generally.

Sow **LETTUCE** and other seedlings for succession.

Earth up late crops of all kinds; weed, clean, and water, in dry weather.

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PINKS may be piped, that is the side cuttings taken off, cut up to the under side of a knob, the under leaves removed, and the pipings put into a shady corner in the soil, and covered with a hand-glass.

BEEF ROOTS.—Thin them out to proper distances; clear it from weeds.

ONIONS are beginning to swell a good deal, and many will be found too close, though carefully hoed out. Draw out these for bunching or present use; at all events, draw them out, if you throw them away afterwards.

POT HERBS.—Plant out young thyme, savory, marjorum, &c., watch for a good opportunity after rain. Slips or cuttings of all herbs will do well if put out after a wet day, and in shady border.

CHARDOONS.—Plant out, either in deep trenches, or in a hole like a basin. It is the stalks that are eaten, and they must be earthed up like celery.

WATERING, WEEDING, &c., must be constantly looked to.

FRUIT TREES on walls must be examined; take off all ill-grown useless shoots, leave none but such as can be well laid in and trained.

WALL FRUIT.—Look over, and thin properly.

FRUIT TREES, such as were planted in spring, must be looked to, the earth kept close about the stems, and plenty of water given.

VINES out of doors must be cleared from all useless shoots; nail all strong shoots with fruit or without, take off weak barren shoots.

STRAWBERRIES.—Give plenty of water, and keep clear from weeds. As soon as the runners are strong enough, nursery plantations may be made of the strongest and best; let them grow till September, they will be infinitely better than plants from the old beds, or runners which may have struck root and grown on the old plants.

FLORISTS' FLOWERS in general require a little care; preventing the attacks of vermin is an important point. **AURICULAS** are making growth, and require occasional water; **TULIPS** in the best bed, but should have no more wet unless with lime water, or to soften the ground for taking up, can take no harm. The **RANUNCULUSES** ought to be constantly shaded and watered, but the blooms must not be wetted; **ANEMONES** much the same treatment.

DAHLIAS.—Tie up as they grow; remember our former injunctions about watering.

July 1, 1843.

SOME ACCOUNT OF HER MAJESTY'S NEW GARDENS AT FROGMORE.

THE gardens, which for the last fifty or sixty years have supplied vegetables, or rather contributed to do so, to Windsor Castle, are to be destroyed. They were laid out when George the third was king; and it is by some supposed that that monarch, when he directed the enclosure to be made, had solved the problem of encompassing the smallest quantity of ground with the greatest quantity of walling. They are certainly not quite the length of the long walk, but nearly approach it in width. There is little doubt but that the one suggested the other; but, although length is considered a beauty in an avenue, which, with the "Long Walk" in remembrance, none can gainsay; yet, in a kitchen it is any thing but convenient; and when I add to this, that the site is subject to the damps arising from the Thames, and consequently visited as all low lands are in spring and autumn, with late and early frosts, it is not to be wondered at, that in this age of improvement their removal should have been suggested.

Mr. T. Ingram has for many years held the management. Hitherto his talents have been confined within these very *narrow bounds*, but are now about to be developed to the world: he is to be transplanted to the new gardens at Frogmore, and should he be found to possess those abilities that majesty ought to command, a short time must elapse, and great things will be produced. On the other hand, if found wanting when tried, why he will then only have to regret the removal from his old snugery in Datchet Lane, and deplore that he was called to provide ought but those productions which it is said King Nebuchadnezzar was so fond of—cabbages and small salading. If George the Third's garden could boast of the greatest number of feet of wall in proportion to the quantity of ground within it, those of Victoria the First present an opposite example.

The new gardens lie on the road to old Windsor, about a mile from the castle. They are bounded on all sides by walls about twelve feet in height, with massive gates. Immediately within the entrance is a porter's lodge, and on the other side an open shed for attendants in waiting. Having passed these gates, you enter the principal garden, which is partially subdivided into a centre and two side compartments. These are commanded from a terrace, running the whole length, with a carriage drive down the centre; on the one side of which is turf and flower beds, on the other the principal range of forcing houses, their length divided by the gardener's residence, which I was told was in the Elizabethan style. I can only say that it is a very bad example of that queen, and I am very sorry to see that it has been followed by this. The dwelling contains ample accommo-

dation for the gardener, with three small rooms set apart for Her Majesty when she may honour the gardens with her presence. The principal range consists of five forcing houses on each side the dwelling; these are approaching completion, some so far advanced that the vines are planted. In addition to these, at either end, will be conservatories, now just commenced: the range will consist of two pine, two peach and nectarine houses, and the remainder vineries. They all take, for uniformity's sake, I suppose, the same form, varying a little in height. This external appearance is a sad drawback to the internal arrangement. It has hitherto been considered that vineries, where early forcing is required, should be so constructed, that the enclosed area should bear as small a proportion to the surface of glass as possible, it being most desirable to reduce the quantity of cubic feet requiring to be heated. The present instance is in direct opposition to this principle; and I care not by whose advice it has been constructed, or with what prodigality the heating apparatus may hereafter be used; I hesitate not to declare that early grapes will be scarce articles on the Queen's table if Her Majesty is to depend on these houses to produce them. The execution of the work throughout is excellent; the designs, in more instances than the one I have named, bad; they appear to me to have been *collected*, and the person who has made them been deficient in judgment, has been most attracted by novelty. Various pieces of *machinery* are introduced for admitting air; the front perpendicular lights are opened and closed in rather a novel manner, and which secures a great saving of labour. I will attempt to describe how this is done:—level with the lower sash bar is a circular iron rod, running the entire length of the house, at each sash fixed to the rod is a small cog-wheel, and on the sash bar is a quadrant, acted on by the cog-wheel; the iron rod being turned by means of a handle at one end of the house, the whole of the sashes are opened to any desired width, and closed again in an instant. This is certainly a very great improvement on the old plan, but I think may yet be bettered. It may occasionally be desirable to admit air at one sash, keeping others closed; this may be done by means of a joint or hinge in the quadrant, which could then be thrown off the cog-wheel at pleasure, and the sash thus prevented being acted on, which sometimes must be very desirable, for, as there are various sorts of vines planted in the same house, various treatment is required. Ventilation at the back is obtained by similar means, and the same fault attaches—the whole or none must be opened; but this is remedied in the back lights in the roof, they slide not altogether, but separately as of old. The balance weight here gives place to, perhaps, as complicated a piece of machinery as can be met with—I can only compare it to Hogarth's

self-acting corkscrew; it will be found almost as useful, and nearly as extravagant. His admirable satire on the inventions of other days would, I should have thought, put a stop to such ridiculous expenditure as this in these times. I will not attempt to describe it—it must be seen to be understood—"I cannot liken it, I never saw the like." The houses throughout are warmed by hot water. On the upper range of pipes are cast trays for steaming; these trays are supplied with water from small pipes, placed horizontally over them, perforated with holes. I would rather have seen a small but continuous stream passing over the upper surface of the pipes, in order to avoid that hot steam which must be thrown off from the heated pipes when the water in the trays is nearly absorbed; the running water would create a vapour more nearly allied to nature, which it should be our endeavour to imitate as much as possible. The pine houses, one of which is almost ready to receive the plants, are well done; the hot water pipes are not only laid back and front, but are conveyed through the pits, surrounded by broken flints and brick-bats, thus a good circulation of bottom heat is obtained with such houses, and good succession ones in the back ground, it were almost an impossibility not to be successful. The peach houses I am inclined to find fault with, not because I do not think but they may be productive, but because a span roof house would be more effective, and equally good. Under a span a double row may be planted, and being trained over a circular trellis, when meeting in the centre, and covered with fruit, as I have seen it, is a sight any gardener may be proud to exhibit. In the present instance they are to be trained like vines, on wires, having the same rake as the house, which is the common lean-to, the appearance of which can never be compared to the beautiful arched avenue hung with luscious and inviting fruit, which must ever follow the previously described training, when ability is not wanting in the superintendent. To continue through the fruit department, I must conduct the reader, as I was myself conducted, into the north garden, in which are built all the pine, melon, and cucumber pits, and space is set apart for the cherry houses, but which are not yet commenced. Against the wall, which is in the principal garden, and at the back of the houses previously described, are the fruit rooms, mushroom houses—one in full bearing,—spacious sheds, dwellings for the men, and stoke holes for the warming apparatus; but I did not see that any preparation had been made for fuel in connection with the fire holes; whether they have been forgotten, or whether a plan is to be introduced for boiling the water without it, I know not, but this I do know, I could not find such a place; and on asking where they were situate, I was answered by a sort of smile that seemed to say, "what, have you found out

that too." I shall pass over the pits and pine succession houses, as they exhibit no novelty, but must rest awhile at the cucumber houses. Provision is made for growing the plants on slate shelves, which run the whole length of the house, and are about five feet in width. The hot water pipes are placed below, as the slate which will receive the plants is set several feet below the glass, I conclude that the plants will be fruited on horizontal trellis; this will have a good appearance when in full bearing, and there is very little doubt but that fruit may be obtained in such a place at almost any season. The next and last thing I shall notice in this garden is, the provision made for forcing asparagus. Here, again, hot water is called into requisition; the pipes are passed up the allies between the beds, and it is intended that *one set of pipes shall force three rows of plants*, but if so, they must come in at different seasons, for it were impossible to suppose that No. 3 row, the furthest from the pipes, can ever receive any thing like the heat that No. 1 does. I am inclined also to think, that to throw *any heat* as far as No. 3, No. 1 will find itself uncomfortably warm. Now, as asparagus does not like this kind of treatment, and is moved as soon as any vegetable I know, I think it very likely we shall soon hear of No. 1 and the gardener having joined issue. As I do not like to find fault without having a remedy at hand, I would suggest, that instead of placing the pipes at the *side* of each bed, they should have been *under*. A chamber, the whole length and width of the bed, may have been formed about two feet below the surface; pipes could have been conducted through the chamber, and the asparagus planted in the two feet of earth above. By these means the heat would be generated equally throughout the whole bed, and regulated at pleasure, which is impossible in the plan adopted. The ground, corresponding with the north garden, on the south of the centre or principal one, is divided into three compartments of about an acre each, but I saw nothing worthy of notice. The whole gardens contain about twenty-two acres, and are surrounded by slips, bounded partly by wall, partly by paling, thus allowing either side of the main walls to be planted, which has been done apparently with well grown trees, numberless in variety. The soil, which is said to be very fine, has been trenched throughout nearly three feet, I was told, but I do not vouch for it as a fact that the top spit was buried. I can hardly suppose that such a thing could possibly be allowed to be done—if it has, it is now past remedy, because it is planted, and an error has been committed that no plough-boy would have fallen into. As I shall occasionally visit the gardens, if any thing very good or very bad presents itself to my notice I shall record them.

D.

PROPAGATION OF FLOWERS AND PLANTS.

FLOWERING plants which only live one summer are called annuals, and are of two classes, tender and hardy. The first are raised from seed sowed in pots or pans, placed in a mild hot-bed, or near the windows of a greenhouse, and when the plants are of sufficient size, are either potted for the convenience of removing them to stages, or to balconies, or window-sills, where wanted to flower; or they may be so raised to be planted out in the open borders in May. All the hardy annuals may be sown where they are intended to flower in the open ground. Portions of both these descriptions of annual flowers should be sown twice in the season, viz., in March, and again in May, in order to prolong the flowering as far into the autumn as possible. Greenhouse and stove plants may be also raised from seeds, when these can be procured, in the same way as are tender annuals, though the process is often more tedious. But the most expeditious way of propagating stove and greenhouse plants is by cuttings, by which a great majority of them may be increased. Some skill is required in choosing the proper shoots, or parts of shoots, which most readily make roots. Experience has taught us, that in propagating by cuttings, if we take those parts which are too young and succulent, they are liable to mould and damp off before new roots are formed. On the other hand, if we select pieces of the old shoots, that is, such as have been formed two or three years previous, they will but with difficulty make roots, because they have less vital energy than the shoots more recently produced. The propagator, therefore, chooses shoots of exotic plants, as well as those of all others, which are neither too young nor too old; and this is the point on which practical skill must be exercised. All the family of Cape heaths, and all heath-like-growing shrubs, whether African, South American, Asiatic, or Australian, may be propagated by taking points of their young shoots as soon as they have gained sufficient length and firmness, say a length of two inches, and the colour somewhat brown at the place where the cutting is separated. The cutting should be cut right across, just below a joint, if it be a jointed stem, or just below the insertion of a leaf. The cutting need not be longer than from one to two inches. One-third of the lower end divested of leaves, and this portion of the cutting should be inserted and fixed in the soil. The shallower the cutting is inserted the better chance it has of making active roots. There is a certain stratum of the earth on which the moisture rising from below, and the action or influences of the air meet; and in that stratum the rooting of cuttings as well as the germination of seeds most readily takes place. This stratum is generally about half an inch beneath the surface. When a cutting is separated from its mother plant it loses its supply

of aqueous food, and immediately endeavours to generate new roots instead of those which it has lost. It contains within itself a vital principle, which is exerted in the production of both roots and shoots, provided it is placed in favourable circumstances; that is, where it is neither drenched and chilled by too much moisture, or dried up and shrunk out of form by the want of a requisite share of humidity. That a proper medium should be formed to suit the mutilated condition of the cutting while making new roots, experience has proved that pure sand, commonly called silver sand, is the most suitable for the purpose; it retains no undue portion of moisture, nor admits too much air, especially when covered by a hand-glass, within which the cuttings are planted. Pots (open thirty-twos) are well drained by gravel or cinders in the bottom, and filled nearly to the top with compost, and covered with about an inch of the said silver sand, all pressed pretty tightly down. The cuttings, after being prepared, are inserted in the sand, and not too closely together, and immediately watered to consolidate the whole. As soon as the surface and cuttings are dry, the glasses are put on, and the pots are plunged either in a mild hot-bed, or in some other suitable place. Some kinds of cuttings strike soonest when placed on a little bottom heat; others require nothing of the kind, but succeed in a cold shaded frame. When cuttings have fairly struck root, which will appear by their beginning to put forth new leaves, they should be carefully raised, and placed in small pots; because they will require richer soil than the sand in which their roots have been formed. For the generality of exotic plants, whether stove or greenhouse, a suitable compost is formed of one-third turfy loam, one-third heath mould, and another third of pure white sand. This compost should be well mixed together, but by no means sifted, or broken finer than can be done with the spade; and in potting the greatest care should be taken to drain the pots by crops and nodules of turf. The stronger growing sorts of Australian and Cape plants, such as Banksias, Proteas, and the like, may also be raised from cuttings, if the ripened points of the shoots be chosen and taken off at a joint, planted in sand, and covered with a striking glass, which must be frequently wiped dry, the pots set, but not plunged, in an airy place, lest the cuttings get damp, which would ruin them. All plants having jointed stems, whether woody or herbaceous, are easily increased by cuttings, the joints placed in soil readily emitting roots, and those in the air as quickly producing shoots. There are a few plants which are stemless, which, if they cannot be divided, may be increased by cuttings of the roots, indeed there are many exotics which may be increased by cuttings of the root that cannot be conveniently propagated in any other way. Flowering plants are also propagated by

layers. This is only had recourse to with kinds which do not readily strike roots from cuttings. Layering is a safer process; because the shoot to be rooted is not entirely separated from the parent plant, but only bent down upon, and slightly covered with soil. The buried part of the shoot is *tongued*, to facilitate the emission of roots; closely, but not deeply, covered with compost, the point being kept upright. When rooted, they are independent of the old plant, and may be removed at any time. Roses, and many other hardy plants, are usually increased by layering; that tribe of shrubs called *American* are invariably raised either from seeds or layers. Some few kinds of both stove and greenhouse plants can only be propagated by layering, or by the more scientific means of budding or grafting. Hardy or tender herbaceous perennials are increased by cuttings, or layers of their stems, or by simple division of the roots; and all bulbous and tuberous-rooted flowers are increased by either the seeds or offsets.

THE ROYAL BOTANICAL SOCIETY'S EXHIBITION, REGENT'S PARK.

ON Wednesday the second exhibition of flowers and plants took place in the Royal Society's gardens, Regent's Park, and such a collection of magnificent subjects as graced the tents on the occasion have rarely been seen together. The company, too, were numerous; but the full tide which had set in at five o'clock, and was rapidly filling the gardens, was suddenly checked by the rain, and many hundreds of carriages passed on full of company or were turned towards home, in consequence of the cheerless visitation of the elements; nevertheless, there were some thousands of fashionables, and the scene during the period that the sun shone was animated in the extreme. The magnificent show of roses from Messrs. Rivers, of Sawbridgeworth; Lane, of Berkhamstead; Paul, of Cheshunt; Wood, of Mansfield; Hooker, of Brenchley, and others who are noted for their cultivation of this queen of flowers, was a leading attraction, and many were the loiterers amid these double charmers of the senses. Among the more scientific connoisseurs the orchideous plants took the lead. The flowers of this tribe of plants assume the most extraordinary forms that can be imagined, as if nature in her sport had endeavoured to imitate in flowers the forms of monkeys, birds, frogs, and butterflies,—nay, the Gongora is as close an imitation of what nursery maids call "the naughty man," and other people call "the old gentleman," as we can possibly imagine, if the pictures of that personage are at all "after nature." Extravagant as our descriptions of these parasitical beauties might be, we should despair of doing justice—they require to be seen to be at all appreciated. Mr. Rucker, of

Wandsworth, displayed a vast number, in great variety and beauty; and Mrs. Lawrence, of Ealing Park, wife to the celebrated surgeon of that name, produced a large quantity scarcely less interesting, but many of which, being different from those just named, added wonderfully to the interest of the exhibitions. Both these amateur exhibitors had grown their plants to such perfection, that quantity, perhaps, had as much to do with the decision as any thing, and Mr. Rucker had the head prize for this class of flowers. The interest attached to orchideous plants is somewhat increased by the manner of their growth, which is generally on trees, like our mistletoe; for the greater part of them rival the camellion, and live on air; in consequence of this habit they are mostly grown on lumps of wood, hanging from the roof and sides of hot houses, or on stands made of stumps of trees, where their roots soon twine about and hold them fast, and they take their nourishment from the damp atmosphere created for their exclusive use, for scarcely any thing should be grown in a house devoted to the orchideous tribe, or, if it must be so, they require to be watered, or to be assisted with wet moss, to make up for the want of damp in the air itself. They are chiefly inhabitants of those trees which grow in warm swamps, and have been imported from almost all hot countries, chiefly, however, from the East and West Indies and South America. The two most beautiful plants in all the collections were, a *Vanda teres*, growing on a stump among some moss, and exhibiting its beautifully coloured oddly formed flowers, in two trusses or bunches, and *Aerides odoratum major* an enormous specimen, perhaps the finest in the country, with scores of magnificent racemes of pendulous flowers of bright lilac and white, throwing into immeasurable distance the most attractive of our familiar plants and flowers. Another striking object was a plant of *Nepenthes distillatoria*, or pitcher plant, five feet high, the singular characteristic of which is, that at the end of every leaf there hangs a complete pitcher, with a cover to it capable of holding a large wine glass full of water. Various are the popular attributes of this plant: such as, affording relief to the passing traveller, distilling its own food, &c., but the fact is, the plant does fill these little pitchers drop by drop at one period, and the liquor is wasting at another. The plant at these gardens had twenty or thirty full grown pitchers upon it, and perhaps is the best specimen in the country, showing to great advantage the skill of Mr. Mylam, the gardener by whom it was exhibited. Of stove and greenhouse plants there were several first-rate collections, but the most complete and the best grown in the gardens was a collection by Mr. Barnes, gardener to ——— Norman, Esq., a gardener cheated (if one dare use such a term to a public body), of his prize last year at Chiswick, and who had re-

fused in consequence to show them any more. Whether he originally intended to exhibit on Wednesday at the Park or not is a doubtful point, but there appeared in a paper—acknowledged to be the organ of the Horticultural Society—on the Saturday before a most insulting article, which, among other obnoxious misrepresentations, contained an assertion that Gardeners who refused to show at Chiswick, tacitly acknowledged that they could not grow plants well enough to pass the ordeal of their judges. This is said to have induced Mr. Barnes to show at the Botanic Gardens, and certainly no one ever produced at Chiswick fifty plants equal to those exhibited by Mr. Barnes on Wednesday; there were many experienced gardeners present, and there were not two opinions; for the plants, though comprising almost every tribe of stove and greenhouse specimens, very different in habit, character, and treatment, were perfection itself. Thus publicly was the *veracity* of the writer tested, and the gardeners were by no means flattering in their reception of the offender, as he agitatingly looked upon the noble collection grown by the man whom he had not a week before denounced as one who could not grow plants well enough for Chiswick. The judges, we need hardly say, awarded Mr. Barnes the largest prize in his class. There were other beautiful collections by Sir Edmund Antrobus; Mr. Pawley, of the White Hart, Bromley; Mr. Frazer, Nurseryman, of the Lea Bridge Road; Mr. Jackson, of Kingston; Mr. Hunt, gardener to Miss Trail; and Mr. Cockburn, gardener to the Earl of Mansfield. There were likewise many fine specimens shown by Mr. Henderson of Pineapple Place; Mr. Mountjoy of Ealing; Mr. Appleby, gardener to ——— Brocklebank, Esq.; and others. The collections of Geraniums, called now by the learned lovers of hard names *Pelargoniums*, were numerous. Mr. Beck, of Isleworth, headed the amateurs, and Mr. Catleugh and Mr. Gaines, (the former of Chelsea, the latter of Battersea) took the lead among the nurserymen, both of them winning first prizes, one in one class, the other in another class; and there were many fine seedlings, which, until we ascertained a material fact, we were surprised had no prizes awarded. This show is, unquestionably, a rival to the Horticultural Society of London. It was established under the direct patronage of the Queen. They do say, "In the multitude of councillors there is wisdom." We wish it had been so in this case. There are certain persons who act as judges at the Horticultural Society; and the Fellows, who have formed a sort of "Little go," or Geranium Society, to show at Chiswick, and give prizes for new flowers, have been very liberal, by which they have encouraged many to show at that place. The Royal Botanic Society, in their short-sightedness, actually engaged the judges

of the Horticultural Society, including Mr. Wildman, of the late Floricultural concern, to be judges of Seedling Geraniums on Wednesday; and these persons, *honestly, no doubt*, refused prizes to all the seedlings: thus, *of course unintentionally*, disgusting all the showmen at the Park, and upholding the comparative liberality of the people at Chiswick. We were assured by one of the best growers of Geraniums in the country, That it was the most gross injustice to refuse a prize to one flower called *Excelsa*, to a second called the *Red Cross Knight*, and to several others whose names we forget; but one belonged to Mr. Beck of Isleworth. Among the novelties not yet noticed, was a splendid new Fuchsia, called *Victoria*, shown by Mr. Smith of Dalston, to which the judges in that department properly awarded a first class prize. It was a plant of fine habit, blooming abundantly at the base of every leaf, the flower large, rather pale outside, and a rich crimson inside. Pinks were abundant and fine. Mr. Norman of Woolwich, and Mr. Brown of Slough, among the host of other exhibitors, were awarded prizes. Pansies were fine, but no prizes allowed, they fell under the same department as the unfortunate Geraniums; and such was the dissatisfaction expressed by numerous persons in the grounds, that we advise the Council to consider well before the same persons are allowed to go in again as judges, unless the practical side of the question be strengthened by the addition of some one or more who know better, and will act better, than the majority did on Wednesday. The bands of the Royal Horse Guards (Blue) and the First Life Guards delighted the company with well executed popular music, occasionally relieved by a private band, which was anything but ornamental amidst a scene so gay: compared with the brilliance of the military uniform, they appeared like a company of undertakers, and we felt quite relieved when we found they did not play "THE DEAD MARCH IN SAUL."

In conclusion, we have only to congratulate the Royal Botanical Society upon a great triumph, notwithstanding the disadvantages we have mentioned; and it is only fit the Horticultural world should know that the Council's instructions to the judges were to be just and liberal; and it is the more vexing, because when flowers which have received first class distinctions at the Floricultural Society will have been thrown away, some that were pronounced unworthy on Wednesday will be found in every collection.

PHENOMENON OF LIGHT.

SIR,—In consequence of an inquiry as to whether the red ray of light has "any appreciable weight," I am induced to trouble you with a few observations on the connection between the

gases—oxygen, nitrogen, and hydrogen—and the three primitive colours of the solar ray. Mr. Kyan proves an intimate relation between them; and I think I am able, by having discovered the law of that relation, to demonstrate their identity. The comparative space occupied by the original rays in the spectrum, obtained by the triangular prism, are as 6, 9, and 21; and if we divide a circle into these proportions, the respective areas will be as 2·0944 for red, 3·1416 for yellow, and 7·3304 for blue. If we take the mean of the specific gravities of the three gases, as given by Davy and Reid, they will be—ox. 1·2211; nit. 1·05406; hyd. 0·07925. These, multiplied into the several volumes of the gases, which, when united and ignited, produce a perfect white light (and which are—ox. 5; nit. 3; and hyd. 8), may be considered as their illuminating densities. Let these densities be severally multiplied into the respective areas of the respective colours; as that of oxygen into the area of red, that of nitrogen into the area of yellow, and that of hydrogen into the area of blue; and let the products be termed *a*, *b*, *c*. Then the following result appears: If $x=a-b$, then will $a-c=x$. Whence we perceive that a law analogous to that of gravity obtains; and that if we regard *a*, *b*, *c*, as the photo-gaseous powers of the sun's rays, we discover that the difference of the red and yellow is the square-root of the difference of the red and blue; by which it is evident that the variation of the relative areas of the three primitive colours—red, yellow, and blue—exactly corresponds with the relative densities of the three gases—oxygen, nitrogen, and hydrogen; wherefore it follows that these three gases are the constituents of solar light, which can no longer be considered as an imponderable body, but may be weighed (at least in theory) in the following manner:—In a cubic foot of solar light there will be 288 inches of oxygen, 432 of nitrogen, and 1008 of hydrogen; the relative weights being as follows:—

| | |
|--------------------|------------------|
| Oxygen | 0·2035 of an oz. |
| Nitrogen | 0·263515 ditto. |
| Hydrogen | 0·04623 ditto. |

Weight, or specific gravity
of a cubic foot of solar
light } 0·513245

As regards the *practical* evidence of this theory, it may be found in the following facts:—

1st.—The three gases, mixed in a certain proportion, produce when ignited a "*perfect white*, or celestial light."

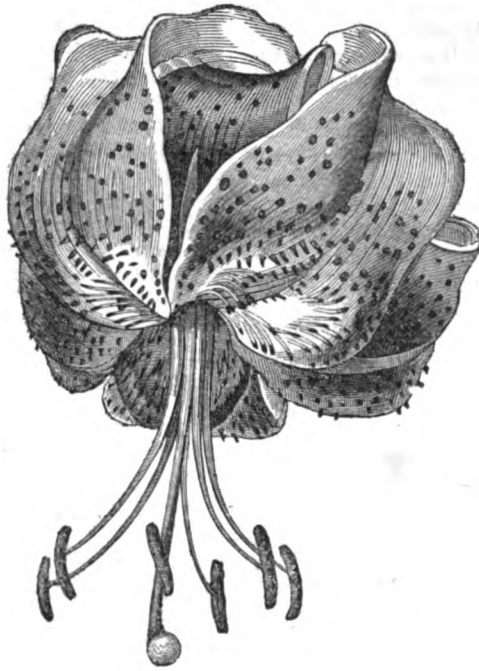
2nd.—The three colours, mixed in a similar proportion, produce a *perfect white* colour.

A very simple experiment proves this latter fact. Divide a circle (say four inches in diameter) into three parts of 6, 9, and 21; that is, let the circumference be so divided, and let

the relative areas be—red, 2·0944; yellow, 3·1416; and blue, 7·3304. Then rotate the circle swiftly, which may be done on a common lathe, and the colours will be seen to unite, and produce a most brilliant *white*. I am not aware that this experiment is known. I was led to make it as a proof of the theory of light so ably propounded by Mr. Kyan. It may be asked why the gases do not appear luminous in the night? This, I think, is accounted for by considering the cause of their illumination to be their electrical condition, which depends on their being in due proportion. At night there is less positive electricity in the air than in the day, and so less oxygen; the discharge of which *direct* from the sun may be necessary to maintain its equilibrium.

R. J. MORRISON, Lieut. R.N.

THE ROSE-BED OF BENGAL.—Ghazepore stands upon the north bank of the Ganges, about seventy miles by water below Benares. It is not a very extensive town, but is justly celebrated as the Gul-istan (the rose-bed) of Bengal. In the spring of the year, an extent of miles around the town presents to the eye a continual garden of roses, than which nothing can be more beautiful and fragrant. The sight is perfectly dazzling; the plain, as far as the eye can reach, extending in the same bespangled carpet of red and green. The breezes, too, are loaded with the sweet odour which is wafted far across the river Ganges. The flower is cultivated thus extensively for the manufacture of rose-water, that of Ghazepore being justly esteemed as surpassing in excellence every production of the sort. Whether or not this may be attributable to the superiority of the flowers, or the process of distillation, I cannot say; but as the roses did not appear to me to possess greater fragrance than others of their class, I should rather refer it to the latter cause, unless, indeed, it be that the wonderful abundance of the material enables them to be more lavish in its decoction than is elsewhere possible. It is no less cheap than excellent; a gallon of the most delicious may be purchased for seven or eight shillings; they do not, however, understand at Ghazepore the art of distilling the *atr* of roses in the same perfection as the Persians. The spurious compound which they endeavour to palm upon the traveller is weak, and possesses a sickly disagreeable odour foreign to the rose; but the purchaser is often deceived by a little of the true *atr* being rubbed about the stopper and neck of the bottle. The prices demanded for this miserable imitation are exorbitant; the explanation of which I received from one of the venders. He assured me that long experience had taught him that it was part of the character of the English to despise every thing cheap, and to consider any thing choice and excellent which was extravagantly priced.



LILIUM SPECIOSUM.

Of all the Lily tribe there is, perhaps, none so beautiful as the *Lilium Speciosum*. Its petals have the appearance of rosy coloured wax, shaded off to a white centre, and studded with small pieces of ruby, and although they are not all equally full of their red spots, or rather studs, we think the variation arises as much out of the mode of culture as any thing. We have seen them now for this two or three seasons at horticultural shows, where they make a conspicuous feature, and generally attract great attention. It has been so recently introduced, that few private collections have it. It appears to have been discovered in Japan, which abounds with good plants, by Siebold, who sent it to Holland. Messrs. Loddiges procured it in 1836, and flowered it in 1837. It forms a beautiful and distinct variety among the many other species of *Lilium Japonicum*. We presume, although it has been nursed a good deal by some people, that it requires nothing more than to be kept from frost. We should treat it just the same as the other *Liliums*, that is, keep them in frames protected from the frost, and grow them in the same soil—a compost of two-thirds sandy loam, and one-third cow dung, well rotted. If the loam cannot be procured as sandy as it should be, a mixture of sand must be added to make up for the deficiency. The engraving at the head of this article represents the single flower, but there are generally three, four, and occasionally five flowers, at the end of the stem,

growing much the same as is sketched at the foot. It has a scaly bulbous root like the ordinary garden Lilies, and propagates by offsets. They should not be put into too large a pot at first, but be shifted from small to larger, until they bloom, which they will do well in twenty-four sized pots. We hardly know a more pleasing feature in a garden of flowers than a good assortment of Lilies in pots, and they require as little care as any thing we know of.



SCALE, OR COCCUS.

THIS little depredator makes its appearance upon the tree about the middle of May. At this stage of its existence it is nearly of an oval shape, furnished with six legs and two horns. The whole body is a cream colour, or yellow white, and in size so diminutive, that it can only just be discerned with the naked eye, and requires the microscope to distinguish it properly. It wanders pretty actively over the tree for a short time, most probably in search of a suitable situation for a permanent abode. However, when nature calls for sustenance, it makes its attack upon any part of the tree, either trunk or branches, leaves or fruit: all appears to be alike that happens to fall in the way; and soon after being permanently fixed, it commences manufacturing itself a film, which, in an early state of its process, is nearly round, white, and downy. This gradually becomes testaceous, increased in size, and altered in form, and when attained its completion the shell is brown, about an eighth part of an inch long, obtuse at one end, and gradually tapers to the other end; it is rather arcuated. The whole is emblematical of a cow's horn, except that side which adheres to the tree, which is rather flat. About the latter end of August the parent lays her eggs, to the amount of from twenty to thirty, which are white, rather of an irregular long round form, and shortly after dies in the shell. The scale at shell still assumes the same appearance, and if not dislodged, would probably remain on the tree for several years. About the middle of May many of the young are moved to quit the ova, and others are continuing to do so from this period till about the middle of June. Each family as they are brought into existence, set off from the door of their family abode, in various directions, in pursuit of settlements of their own choice.

These insects, when numerous, give the tree a rusty dead-like appearance. The tree is not only retarded in its growth, by the insect absorbing the sap, but materially injured for want of a free circulation of it, which is prevented from their vast numbers being so closely and firmly cemented to the tree. In this manner I have seen trees, not only of pears but of apples, plums, and various others, so completely stagnated as scarcely to make any growth, and the fruit produced not half its proper size, much crippled, and in flavour nothing.

FOR THEIR DESTRUCTION.

Dissolve one pound of common soap in two gallons or more of soft water over a gentle fire, then make it up to five gallons, or not to exceed six gallons, with soft water, must be applied well with a painter's brush all over the tree at least twice, the first time not later than the beginning of June, and the second time in the

middle, or not later than the latter end of June. There should not be much variation in the time here specified, as there is at least a month difference in the time of the first and the last issuing forth, and therefore, there is a danger of the shell of the first becoming too hard for the mixture to penetrate sufficiently by the time the latter ones have quitted the ova. At the winter pruning, all the refuse branches should be gathered and burned; and to do it more effectually, a cloth or mat should be spread to catch the smaller pieces, for were they to be left on the ground the insect, on leaving the egg at the spring, would ascend and fix on the tree.—JOSEPH MAJOR, *Architectural Gardener*.

HERNE'S OAK.

THE existence of this venerable tree, which is associated with the memory of Shakspeare, has lately been denied. An interesting communication has appeared from Mr. Jesse, of Hampton Court, which completely established the fact, that Herne's Oak, though now "sapless and leafless," still stands in Windsor Park, and, for aught we know, marks the spot where the "fairy elves" now dance "o' nights." The story told lately in the *Quarterly Review*, that George III., in a fit of excitement, ordered Herne's Oak to be cut, having been satisfactorily disposed of, the writer proceeds:—

"Soon after the circumstance referred to took place, three large old oak trees were blown down in a gale of wind in the Little Park, and one of them was supposed by persons who probably took little trouble to inquire into the real facts of the case to have been Herne's Oak. This windfall was cut up into small pieces and sold to carpenters and cabinet-makers in the neighbourhood, who found it very profitable in calling the articles they made a part of Herne's Oak, and disposing of them as Shaksperian reliquiae. These circumstances combined might probably give rise to a report in the newspapers of the day that Herne's Oak was no longer in existence. It would, however, have been a kind act if the reviewer of the *Quarterly* had informed the public in what year and at what date the particulars he mentions are to be found in the newspapers he refers to. To set the matter at rest, however, I will now repeat the substance of some information given to me relative to Herne's Oak by Mr. Ingalt, the respectable bailiff and manager of Windsor Home Park. He stated that he was appointed to that situation by George III., about forty years ago. On receiving his appointment he was directed to attend upon the king at the castle, and on arriving there he found his Majesty with 'the old Lord Winchilsea.' After a little delay, the king set off to walk in the park, attended by Lord Winchilsea, and Mr. Ingalt was desired to follow them. Nothing was said to him until

the king stopped opposite an oak tree. He then turned to Mr. Ingalt and said, 'I brought you here to point out this tree to you. I commit it to your especial charge, and take care that no damage is ever done to it. I had rather that every tree in the Park should be cut down than that this tree should be hurt. *This is Herne's Oak.*' " Mr. Ingalt added, that this was the tree still standing near Queen Elizabeth's Walk, and is the same tree which I have mentioned and given a sketch of in my *Gleanings in Natural History*. Sapless and leafless it certainly is, and its rugged bark has all disappeared.

' Its boughs are moss'd with age,
And high top bald with gray antiquity ;—

but there it stands, and long may it do so, an object of interest to every admirer of our immortal bard. In this state it has been, probably long before the recollection of the oldest person living. Its trunk appears, however, sound, like a piece of ship timber, and it has always been protected by a strong fence round it—a proof of the care which has been taken of the tree, and of the interest which is attached to it. Having stated the above fact, I may add, that George the Third was perfectly incapable of the duplicity of having pointed out a tree to Mr. Ingalt as Herne's Oak, if he had previously ordered the real Herne's Oak to be cut down. I have also the authority of one of the members of the present Royal Family for stating, that George the Third always mentioned the tree now standing as Herne's Oak. King William the Third was a great planter of avenues, and to him we are indebted for those in Hampton Court and Bushy Parks, and also those at Windsor. All these have been made in a straight line, with the exception of one in the Home Park, which diverges a little, so as to take in Herne's Oak as a part of the avenue; a proof at least that William the Third preferred distorting his avenue to cutting down the tree in order to make way for it in a direct line, affording another instance of the care taken of this tree 150 years ago. I might multiply proofs as to the identity of this interesting tree, were it necessary to do so. The reviewer of the *Quarterly* refers me to the old women of Windsor. I will only add, that had that gentleman taken the same trouble that I have done to ascertain from the descendants of Mrs. Ford and Mrs. Page which they considered to be the real Herne's Oak, he would have been told that they had often danced round it in their younger days, 'had couched in the pit hard by,' and that it was still standing, although

' A hardened stump, bleach'd to a snowy white.' "

CROP OF EARLY POTATOES.

A GREAT deal has been suggested and written upon the best modes of planting potatoes, to obviate what was termed some years since, "the

disease of the potato," and to secure the greatest return. I have an opportunity now to state the results of an experiment, which, as far as it goes, taking the variety of the plant and the character of the season into the account, may be considered decisive. Mr. Knight was the first to introduce the method of planting in rows, far removed from each other, the tubers being always uncut, and at very small distances apart in the rows. Subsequently it became a question whether the entire tuber did not occasion a waste of seed, without securing an equivalent return; and a series of experiments in the gardens of the Horticultural Society appeared to prove that a wise economy might with perfect safety, be exercised, by making use of "cut sets" in lieu of whole potatoes.

In planting a bed of the early *ash-leaved*, I had a fair opportunity of forming a comparative experiment with a sample which was purchased last spring of a neighbouring nurseryman. The plot was set apart, so as to be divided into five spaces, one yard asunder. The line was stretched, and a trench, one spade deep, and about ten inches wide, was dug, the loose shovellings being thrown ridgeways on each side. By one spade deep, I mean only to imply that the spade was driven to that depth; but the actual level of the loosened earth was not six inches below that of the surface of the plot. The upper soil was originally a binding hazel loam, one foot deep, over a sort of chalky brick earth; it contained much gritty, silicious sand; but by trenching, frequent light manuring, and subsequent diggings, was much meliorated in texture. Finally, the preceding crop was broccoli, in manured trenches; that, however, had been destroyed by the intense frost of the winter.

No manure was introduced for the potatoes, but the earth in the trenches was dug again, turned, broken, and levelled: then, on March 13th, the smallest *whole* tubers were selected and planted in dibbled holes, four inches apart, the crown or rose ends uppermost. They were covered, first, with one inch of light earth, then with half an inch of coal-ashes, and small, littery, lining manure, quite black, and pulverisable: two pounds only were set in this row.

2. The second row was prepared and planted in like manner, with *medium* sized entire tubers—total. 2 12

3. The third row, with halves, cut lengthways, of the largest tubers, each being about three inches long. 2 14

4. The fourth, with the corresponding halves..... 2 6

5. The fifth, with *entire* largest tubers, about six inches apart..... 2 8

The total weight of the tubers employed—12lb. 8 oz.

As the plants advanced, they were hoed once, then the earth from the ridges was brought

down against the stems, by which means they never suffered from any of the frosts of the early spring. Finally, the earth was deeply hoed, and a little of the surface drawn up to the plants, but not so as to raise anything of a ridge. This was all the culture that the plants received; and on the 15th of July the first tubers were dug for use, the haulm being still green. Though immature, the flavour was fine, and the texture rather mealy: the quality improved every day, and the first row was raised by the 28th day, its total yield being 23 lb. 2 oz.: of these, not more than 3 lbs. were so small as those used for the seed in planting. The second row of plants, from 2 lb. 12 oz. of tubers, a size larger, being of course more matured, yielded, between the dates July and August 10, 32 lbs. The third row, from 2 lbs. 14 oz. of large halves (Aug 16), produced 39 lbs. 14 oz. The fourth, from halves, 2 lbs. 6 oz., the haulm almost dry, on the 28th yielded 33 lbs.; and the fifth, from 2 lbs. 8 oz. of large, entire tubers, produced 41 lbs.

Thus 12 lbs. 8 oz. of ash-leaved kidneys, not one tuber of which weighed more than 2 oz., produced a return of 169 lbs.; but it is to be remarked, that from 5 lbs. 4 oz. of the largest tubers, cut lengthways into halves, 72 lbs. 14 oz. were obtained, whereas 2 lbs. 8 oz. of the largest *entire* potatoes yielded 41 lbs. only. Now, the circumstances attending the whole course of the experiment were precisely similar; the progress was the same, and all the rows were equally exposed to the influence of light, air, and the fertilising showers of June and July. The broad-sides of the rows had an aspect of south by east, and the plants never crowded or fell over each other. If these facts be duly weighed and compared, they will afford some data for future operations, which cannot mislead. My winter potatoes remain to be proved; they stand widely asunder, but close in the rows; they, however, remain untouched; but in due time every required particular shall be strictly reported.

BRUNSFELSIA AMERICANA.

A PLANT of great beauty, and one which is so rarely to be found, that we know not of a good specimen in any of the best collections that we have visited. And yet it has been long in England, the date of its introduction from the West Indies being registered in the catalogues as 1735. It is the object of this notice to make our readers somewhat better acquainted with it, and in the first instance with its botanical character. *Brunsfelsia* owes its name to a Carthusian monk—Otho Brunfels, of Ments or Mayence on the Rhine, above 300 years since. The Encyclopædia of Plants further informs us, that he subsequently became a physician, and in 1830 published a work called *Figures of Plants*. Modern botanists place the plant among the poisonous

tribe of nightshades—*Solanaceæ*. Why, is not very apparent; if it in one or more features resemble *Solanum*, it is as dissimilar as possible in others, and, therefore, in this instance we will abide by the Linnæan arrangement. The plant is found in the fourteenth class, order two, *Didynamia angiospermia*, and in that division of the order wherein the seed vessels is a capsule or berry, with numerous seeds attached to a central receptacle. Calyx of five distinct teeth, rather tubular. Corolla, the tube, very little curved, very long, the limbus or border, broad, flattish, not very irregular, of five lobes. Capsule buried, many seeded. There are three or four species: the present has large flowers, of a delicate cream colour at the first, changing speedily to a pale buff yellow; the leaves rather rigid, long, ob-ovate, pointed; foot-stalks short.

It is certainly a stove plant, and this is the objection which startles most persons; but if it belong to the hot-house it still is so very accommodating in its habits and constitution, that a great transition of temperature will not injure it. We received a cutting from Chatsworth about eight years since; the wood was in about that state of semi-maturity which gave it the appearance of a twig of some broad-leaved willow, pliable, yet firm. It struck in light sandy soil, covered with a small bell glass, the pot plunged in leaves that had a slight degree of heat in them; and in three months possessed a well-rooted plant. This has subsequently undergone many vicissitudes. On one occasion it was nearly frozen, in consequence of an alteration in the house; on another, as no fire heat was used till January, it was consigned to a dark cellar. The leaves were retained during the winter months, though they became yellow; but they all fell as soon as heat was applied, and the plant remained torpid till April. This treatment, which cannot be recommended, brought it early into a condition of flowering, blossom-buds being formed with the first developments; and it has bloomed at three intervals between May and October. The fragrance of these flowers is delicious; it is not very perceptible during the day, but about six in the evening becomes manifest. The odour is somewhat diffusible, not so to an overpowering extent; it resembles that of the *Gardenia*, and perhaps combines the scents of jonquil and the honeysuckle. Each blossom, if not exposed to the sun, will remain firm for eight or ten days; but the fragrance is not in perfection above half that time.

The soil most suitable to strong growth, and productive of a rich dark verdure of the leaves, appears to be a mixture of heath mould, leaves decayed to a black earth, and a rich turfy loam, reduced—equal parts of all, blended intimately; the pots to be well drained, and renewed as the roots form the ball. When growing freely, a good supply of water is beneficial; when at rest, little is required. A temperature of forty-five

degrees, from the present season till March, will secure the plant, and yet bring it to that state of repose, which it, and all other exotics should enjoy at an appropriate period. *Cuttings* strike pretty easily, if assisted by heat; but the young plants do not require the rigorous treatment which is described above. However, the foliage is so good, so little liable to disease or decay, the flowers so lovely, fragrant, and so soon produced, and the habits of the shrub so approaching to hardy, that it seems strange to find it absent and unknown. A well regulated greenhouse would preserve a strong plant; and a good warm pit would bring rooted cuttings safely through the first winter; after which time little danger would be incurred. One word more: *Brunfelsia* as fragrant as the Cape jasmin (*Gardenia*), and it is not miffy in any degree like that beauty—this is a strong recommendation.

FLORUS.

NOTICES OF A FEW NOVELTIES.

AMONG the seedlings of various kinds which we think worth notice, there are some which without being at all first rate are, nevertheless deserving of a place among collections; there are others which take a higher stand, and which one might expect to see announced at better prices, but we had need, if possible, check that grasping desire to send out a dozen novelties instead of one, and to multiply the names of things to an extent which deters the amateur from buying at all, because he cannot distinguish himself and cannot depend on the descriptions to be found in catalogues. We will begin with

GERANIUMS.

RED CROSS KNIGHT.—A very beautiful dark flower, a decided improvement on *Lady Villars*, which is of a bad form, with large upper petals and small under ones, yet with all its bad qualities it was popular on account of its colour and free habit. *Red Cross Knight* is, comparatively with a vast majority of present flowers, of a very good form, thick petal, fine edge, and (from its great firmness) lasting qualities. It deserves to rank with the best of the named varieties, and careful as we are of giving prizes to subjects of doubtful character, we should not hesitate to award one to this, so long as prizes are awarded to one year old seedlings, because there is after all some uncertainty, unless the state of the plant is considered. This seedling is remarkable for the fact, that the *Chiswick* judges (most injudiciously trusted by the Royal Botanical Society to judge their seedlings) passed it over as unworthy of a prize, although they have awarded prizes at *Chiswick* to infinitely worse flowers. It was shown by Mr. Catleugh of Chelsea, at the Royal Botanical Gardens.

EXCELSA.—A very large round flower, bright scarlet crimson, with one great fault, it is crumpled on the edge. It is a most striking flower, and will be purchased by all growers for its great size and compactness, particularly as it has been distinguished by the same recommendation; it has been considered by the same judges at the Royal Botanic Society not worth a prize, though flowers ten times worse have been pronounced by some of the same persons first class varieties. Shown by Mr. Gaines.

BELLA.—A compact round flower, whose chief fault is, that it is in colour too much like the best of our compact round flowers already in cultivation, nevertheless, it is a fair addition to the collections of those who do not dislike small flowers. Exhibited by Mr. Beck, at the Royal Botanic Gardens.

PRIZE.—A flower with the bottom petals quite as large as the top, and rather promising than otherwise for its form, but not sufficiently in bloom to enable us to judge what sort of truss it will make. Its name did not insure its success, for it had no prize at the Botanic Garden. Shown by Mr. Bragg.

PHAON.—A very firm petalled flower, of some novelty in the colour, and tolerable form, quite worthy of a place in all collections, for this simple reason; it is an improvement on varieties in the same strain, and, so far as can be judged from a young plant, is of a good habit. Raised by Mr. Foster, of Clewer Lodge, and shown at *Chiswick*.

PHÆTON.—A flower, of which the same may be said, but which is a shade worse; it is not of the same colours, and will do well in the same collection. Raised by the same individual. It is very dark and rich in colour.

ROBUSTUM.—Plants of the same general character, and flowers remarkable for the same thickness of petal as the foregoing, deserving a place, according to the present state of things, in all collections. Raised also by Mr. Foster, and shown at *Chiswick*.

SAPPHO.—One of the same batch of seedlings, equally as good as the rest, and varied enough to be grown among them. The chief recommendations of these flowers of Mr. Foster's are, that the petals are thick, the edges smooth, the form not bad, and the colours somewhat novel.

ADMIRABLE.—A lightish flower, shown by Messrs. Chandler at *Chiswick*, with broad petals, an enormous trusser, and abundant bloomer, more showy than most of those in cultivation, and useful in a collection.

SIR ISAAC NEWTON, DUKE OF CORNWALL, PRINCESS ALICE, and many others, exhibited at *Chiswick*, in former days would have been thought wonders, and which even now will have many admirers.

KING OF BEAUTIES.—Of a colour and habit similar to several already in cultivation, but very superior in texture and form, an enormous trusser,

if we can consider the specimen shown a fair sample of what it will generally come. It struck us, however, that the truss from which we had to judge was a double one, such as would be called monstrous, in which case the plant can only be looked upon as producing trusses of the ordinary number, five, six, or seven flowers; nevertheless, out of every twelve named plants shown for prizes, nine out of the twelve are worse than the Queen of Beauties. It was shown by Mr. Gains at the Royal Botanic Society, and was honoured by being passed over as unworthy of a prize.

SALADINE.—A very dark, novel kind of purple, good in comparison to named flowers already shown in abundance. Smooth at edges, thick in petal, and moderately good, better than any that approaches the colour—if any can be said to approach it,—and apparently an abundant bloomer. Must be an excellent selling dahlia, though not all a florist could wish for a first-rater. Shown at the Royal Botanic Society's exhibition, and passed over as unworthy of a prize. We believe that all these would have been classed first-rate flowers at the Crown and Anchor by the same judges, but the only one of the number whose judgment we respect is too mild and too modest even to serve as judge with any but well meaning men. The idea of subjecting good sound flowers, that no one would begrudge the money for, to be rejected by the very persons who have decided that some of the pinks of last season, not worth a penny, and Bianca dahlia, not worth twopence, were first-rate flowers, did not please the exhibitors much, and we hope next year some of our readers will remember the rejected pelargoniums, not as first-raters, but as flowers said to be unworthy of prizes, where the council begged and instructed the judges to be liberal.

WEEKLY JOURNAL OF GARDENING.

SOW WALL FLOWERS; Two Year STOCKS, HOLLYHOCKS, SWEETWILLIAMS, and BIENNIALS generally, in rich light earth.

SOW PICCOTEES, CARNATIONS, PINKS, POLYANTHUS, HEARTSEASE, and choice subjects, in boxes, seed pans, or large pots.

Tie up all FLOWERING PLANTS that require support in flower borders.

Pipe PINKS under hand-glasses, and see that they are never thoroughly dry till they have struck.

Put away your TULIPS in their dry boxes; they need not be now cleansed of the mould. It is better to do this after they have laid by a little.

Continue to watch, tie, and open CARNATIONS and PICCOTEES, as directed last week.

KITCHEN GARDENS require attention to weeding and thinning crops which are naturally thick. If ONIONS, now that they are swelling

fast, are still too thick, neglect not to give them room. LETTUCE must be tied up. CELERY earthed up. CARROTS must undergo a second thinning. PEAS and BEANS of the tall running sorts must be stuck. BROAD BEANS topped as they advance to bloom.

Protect CHERRIES (by old netting) and WALL FRUIT generally; it keeps off bipeds as well as birds, both of whom destroy the crop, particularly the extra hands, who are not always among the best Fruit.

July 8, 1843.

GINSENG.

By far the greater number of Chinese medicines are derived from the vegetable kingdom. The root of one, the stalk of another, the fruit of the next, the flowers of the fourth, are each carefully collected and dried for the service of the invalid. But these people consider the ginseng as superior to every other medicine on the face of the globe. Its name, ginseng, jin-chen, or mindsin, signifies "the wonder of the world;" or "the dose for immortality." Hence the name which has been applied to it by our systematic botanists is the *Panax quinquefolius*. It has been said by Pere Jartroux, that the most celebrated physicians of China have written volumes on this root alone. Ginseng is very scarce in the empire of China, the only places where it is found being in the mountains of Shan-tung and Leao-tong. The chief supplies, with the exception of those obtained from America, from which country it is now abundantly exported to China, are procured from Tartary, where it is considered of such importance, that the deserts where it grows are strictly guarded, and heavy fines and punishments are inflicted upon those who trespass upon the grounds, or are detected in the act of unlawfully digging up the roots. No plant has, perhaps, received so much attention, or has enjoyed so long and permanent a fame. It is asserted, that one time the emperor wished to monopolise the trade in this wonder-working root, and actually sent out a body of Tartars to dig it up. After a search of six months they returned, having collected but the very small quantity of twenty thousand pounds weight. It was formerly worth eight and ten times its weight in silver, but it is now frequently adulterated with other roots. The *Panax fruticosus*, and another plant, *Chyn-len*, supposed to be the *Ophiorhiza mungos*, are frequently made to supply its place. But however adulterated it may be, among the Chinese it is in general request. They mix it in their tea and soup, and take it with their usual meals night and morning. As it is a powerful stonachic, it must tend to invigorate the stomach, and take off, in a great measure, the injurious effects which might otherwise follow from the habitual use of tea and opium.



ERIOSTEMON CUSPIDATUM.

Of all the evergreen plants adapted for greenhouse culture, there is hardly one more delicate or more beautiful than the *Eriostemon*, of which the above, and *E. Buxifolium*, are familiar in most good collections. It is now something like eight years ago that the two were first showed at the Horticultural Gardens from the collection of Mr. Glenny, and medals were awarded to them both for superior growth and variety. The sketch above is merely that of a sprig, comprising just sufficient to show the general habit of *Cuspidatum*. The difference between that and *Buxifolium* consists in the leaves of the latter being much shorter and closer together, the branches somewhat more stiff, and the plant generally more sturdy in its growth. *Eriostemon Cuspidatum* grows more rapidly, and the branches will not properly support themselves, but grow more like a weakly drawn plant than one in full vigour; for this reason,—Mr. Glenny recommended the plant to be grown as a standard, and

the branches to be allowed to grow like a weeping willow or ash, but with all its weakness of stem, there was a constant inclination to grow upwards, so that even the branches which hung down for the greater part of their length always turned the three or four inches at the end upwards. The blooms of each of the plants are much alike, the one figured above being a trifle larger, but both are a delicate white, while the foliage is a fine clear green, that of *Buxifolium* being rather darker than *Cuspidatum*. The culture should be the same as that of heaths, with this difference in the compost—that four measures of heath compost, and one measure of rich loam, formed of the top spit of a meadow, with the turf rotted in it (so often described by us as the staple of almost every compost); these well incorporated will grow the *Eriostemon* well; and in respect to the shifting, and all other matters, the culture should be the same as heaths.

THE USE AND DUTIES OF HORTICULTURAL SOCIETIES.

THE only way to make Horticultural Societies really further the interests of science, is to make exhibitors well understand what they are to aim at in the selection of their productions, and to secure an honest decision at each of the trials of

skill. If this be not carried out it will be quite impossible to calculate upon doing any good, and there will be every probability of doing mischief. There should be nothing like uncertainty in these matters, therefore the first duty

of a society is to distinctly lay down the rules by which they intend to be guided in estimating the merits of what is to be shown; they cannot follow a better example than that set by the Ipswich Cucumber Society, for they start by announcing the prizes they intend to give for the best, and the qualities or points which they will value in estimating the fruit for the distribution of the rewards. We happen to differ from them in one very material point of excellence, though we agree with them in the main, therefore judges will be divided upon such points, but the judges at the Ipswich Society have no right to be in doubt an instant. The standard is set, and it is too plain to be misunderstood by either judges or exhibitors. If the Society had determined that the shorter a cucumber is the better it is, the exhibitors had been quite as much at home as they are now it is decided that the longer it is the better it is. It is the distinctness of the Society's transactions that renders them interesting, and the plainness of its conditions that constitutes their value. In all establishments, therefore, for the encouragement of gardening in its varied ramifications, the conditions upon which every prize should be awarded ought to be made known even as the Ipswich Society make theirs known. But what is the general conduct of most horticultural societies? and what is their proceedings founded on? Their general plan is to offer a certain number of prizes for subjects most calculated to make a great show, by which the difficulties of coming to a fair judgment are increased, and they pick up judges without the least discrimination, send them in to award the prizes without the slightest intimation as to what qualities are to be valued most in the distribution of the rewards; and one of the consequences of this mode of proceeding is, that large quantities of ordinary produce are got together, as if quantity were better than quality. Another consequence of gathering such a mass of things together is, a sort of defiance to the most careful censors in the world to do justice; besides which, the absence of all rule to assist them renders it impossible to please any body, because the winning exhibitors know not why they win, and the losing candidates for the honours are as ignorant of the reasons why they lose. When the Horticultural Society of London, in imitation of the Metropolitan Society of Florists and Amateurs, first adopted shows at their gardens, their schedules of prizes were as vague and ridiculous as any set of men could have produced. Mr. Glenny was excessively severe upon the subject, and suggested several alterations which he assumed were absolutely necessary. Season after season did he vituperate the council, all the while, however, proving himself an industrious and successful exhibitor. Without justifying, or attempting to justify the severity of the remarks in the Horticultural Journal, nobody could deny the

correctness of the charges he brought against the body. As a proof of this, it is a fact which cannot be gainsayed, that he was beforehand with them in every improvement; and the most honest of the council fairly admitted, and might admit the same up to this day, that they owed all their improvements to what they pleased to call the scurrility, of which they all nevertheless complained. If we were inclined to republish the whole of the schedules, and the whole of Mr. Glenny's articles thereon for the last two years, it would be instantly seen, that from the first hour they published their first schedule to the present moment *not one solitary improvement has been made by the Society that was not forced upon them by the scurrility (if you will) of the only writer that ever ventured to attack them, or by the examples set them in shows conducted by him; and while as a public body they had no right to complain of severity, they did not fail to break the laws of the Society, and risk the consequences of a bill in chancery, for the sake of punishing him by depriving him of well-earned prizes; thus perverting the objects of a public institution to gratify private pique; although, had it not been for the very abuse which caused that pique it is doubtful whether the society had maintained its position at all. Fortunately for the society the victim set no value on the prizes, and continued showing, though with the perfect knowledge he would have none. We have mentioned the Horticultural Society of London, because in point of revenue (although it has been announced in the *Gardeners' Gazette* that the subscriptions have fallen off to the extent of £800 per annum in two years) it stands first, and in respect to mismanagement it has a sort of pre-eminence. From first to last it has selected judges, in the majority of whom the public could have no confidence; from first to last the council has never published any guide either to judges or exhibitors, with respect to the points which they value in awarding prizes, and it is difficult, if not impossible to find a single meeting at which a real judge of plants, fruits, and flowers, would not have felt thoroughly mortified at the injustice which either ignorance or design had produced in the award of prizes. This is no idle assumption, it is the opinion of men, than whom no better judges exist, sound practical gardeners and plantsmen, whose knowledge exceeds that of the council and judges combined; and when we learn that this very society is trumpeted forth in a paper of their own supporting, edited by their own servant, and distributed amongst their own fellows, for the vast good that the establishment has done to British gardening, it is impossible not to feel the necessity of at least dissenting from, if not taking more pains and proving the fallacy of, any such notion. There are other societies which might have done the state some service had they fol-*

lowed the example of the Ipswich people; and this reminds us of the Metropolitan Society of Florists and Amateurs having done the same thing. They set out to encourage floriculture, and they published for each flower a standard of perfection. An exhibitor knew as well as the judge who had to decide, whether he would lose or win, and unless a man had overlooked some blemish which the judge discovered, he was not often disappointed. The natural consequence of that was a marked improvement in every flower that was shown there. The dahlia, pansy, piccotee, carnation, pink, ranunculus, tulip, and other flowers, advanced rapidly towards perfection, and had every society adopted the standard and published the fact to their exhibitors, there had been a much more rapid advance all over the kingdom. Here, however, the chief complaint against them is not that they did not adopt the standard; for most, if not all of the respectable societies did; the complaint is, that they *did not make it known to their exhibitors that they had done so*, and that they *did not appoint for judges* men who were capable of carrying out their wishes. The rules of the Metropolitan Society have, we believe, been almost universally adopted, and were the committees of the various establishments to announce in their schedules that such would be their guide in awarding prizes, they would soon find the reward of their labours in the rapid improvement of whatever subject they attempted to encourage. The Royal Botanical Society of London, new as it is in the management of horticultural shows, have not professed to promote the cultivation of florists' flowers. We wish they had done so; for after all, their cultivation is the most pleasing branch of gardening, and even as objects of interest they are the most attractive at an exhibition. But although the society promised no prizes, they have wisely given some, and thus, by their substantial acts, given the principal exhibitors an invitation which was omitted in their schedule. But here we have to deplore the fact, that they have actually appointed for their judges men not only in a great measure unfitted for the task, but some of whom, if not a majority, are persons who have given very great dissatisfaction at Chiswick and at the late Floricultural Society. This, so far as the florists' flowers are concerned, has done mischief, and as our reporter has observed or implied, they, by refusing prizes to new geraniums which deserved them, though the same men have been prodigal of rewards to worthless flowers elsewhere, disgusted the showers with the apparent parsimony of the Royal Botanical Society, as compared with the supposed liberality of their other employers at Chiswick. Now, if the Royal Botanical Society would publish the standard they intend to adopt in estimating the value of subjects, judges dare not fly in the face of facts obvious to visitors and exhibitors, but while the

society is silent as to their standard of perfection judges are at liberty to indulge a perverted taste, or senseless prejudice, to establish or condemn a flower according as interests or favouritism, or private pique, may dictate. We cannot attribute the refusal of prizes at the Botanical Society's show to either of these motives or causes, because we do not think the parties, with one or two exceptions, competent to form an opinion. We have seen such repeated errors committed by the same men, that we believe the injustice done to some of the subjects was the result of fear and ignorance combined. They had been so loudly and so justly condemned for pronouncing flowers to be first-rate when they were good for nothing, that they determined never to be blamed for it again, so they avoided that error by giving no prize at all, forgetting that there was as little justice in refusing a prize when it was deserved, as there was in giving one where it was undeserved. However, again we say, had the society published its standard, the censors had only to be judges of fact, instead of directors of taste. There is another reason why the society should not have appointed the same judges as were employed at Chiswick. The duty is or should be very different. At Chiswick there is no trouble, the judges have only to look at the list of prizes for the same show in the previous year, and for the most part copy it. If there be any exhibitors who were not at the show the year before, they have only to see if by any stretch of imagination they can decide his production to be unworthy of a prize, and if they cannot get over it this way, consult the worthy gentleman who manages, as to what they had better do; whereas at the Botanic Gardens, if we can believe our reporter, the council's instructions are to be just, and if they err, to take especial care they err on the liberal side, so that the judges at the latter shows ought to know a little about the subjects they are judging, which is perfectly unnecessary at Chiswick. Our great object in this paper is to impress upon the minds of the committees and managers of Horticultural Societies all over the country, the necessity of attending to two or three precepts which would increase the value of their proceedings, and greatly enhance their power of doing good. **FIRST**, whatever may be the subject to which they intend giving a prize, they should describe the standard of perfection, or refer to some known standard, that the showers may know what they have to approach. **SECONDLY**, they should appoint and publish the names of competent judges, chosen by a public meeting held for that purpose, from a list of persons first approved by the committee. **THIRDLY**, they should award no prize to a new variety, unless it fairly beat everything of its own colour or character in some essential point. **FOURTHLY**, they should give several prizes of moderate amount in each class, rather than give one

valuable one ; because it is more encouraging to, and increases the number of, the showers. Many other useful hints might be given, but the foregoing are golden rules, without which it is impossible that any establishment can give satisfaction long together ; but *with* which it is almost as impossible to fail. We confess this is written after carefully perusing the whole six volumes of the Horticultural Journal, The Horticultural Society's Reports, Schedules, and Transactions, and the first four volumes of the Gardeners' Gazette. Finding much that we disapprove in the language, but nothing of which we can question the truth ; and our conclusions are drawn as much from our own personal knowledge, as they are from the writings we have mentioned.

CULTIVATION OF RANUNCULUSES.

BY MR. HOVEY OF BOSTON.

SOIL.—The best soil for the *Ranunculus* is a rich, mellow loam ; but as this is not always to be had conveniently, good garden loam, enriched with *very old* cow manure, or leaf mould, will answer ; fresh mould, however, it should be borne in mind, will insure a much better bloom. The beds may be thus prepared :—Dig out the soil to the depth of eighteen or twenty inches ; then fill up four inches of the same space with the top soil ; on this place a layer of very old cow dung, or decomposed hotbed manure, of about six inches, and on this ten or twelve inches of fresh loam, being careful that no manure be mixed with it. The whole should then be allowed to settle for a fortnight or a month previous to the planting of the roots.

SITUATION OF THE BED.—The site selected for the bed should be in an open and airy part of the garden, so that the foliage and flower stems will not be drawn up ; under or near the shade of trees should be avoided. The bed should not be raised more than one inch above the walk, just sufficient to designate it from the surrounding soil ; if elevated three or four inches, the soil will be in such a fluctuating state of dryness and moisture, as to be very injurious to the roots. There should be a walk all round the bed, in order to admit of a near inspection of the flowers.

SETTING OUT THE ROOTS.—A great deal of the success attending the cultivation of the flower is dependent upon careful planting. The roots should be covered just an inch and a half deep from the crown, and no more or less ; for nature has so peculiarly endowed the root, that if placed at a greater or less depth, it will form tubers at precisely the depth of an inch and a half, and thus be so weakened as not to flower well. The best method of planting is, to take off two inches of the surface of the bed ; the rows are then marked out each way, and where the lines cross one another at right angles, a root should be set

out, pressing it slightly into the soil to keep it in its place. When all are planted, the two inches of soil is replaced ; and if the roots are of good size, the distance from the crown will be just an inch and a half ; finish by levelling off the bed. The middle sized roots, with firm tubers, are preferable for planting ; and care should be taken to place a little sand under and over each, to guard them against too much moisture.

PROTECTION DURING WINTER.—The roots must be protected in some way during winter, as they will not, at least according to our experience, stand our winters without injury. We have always adopted the following plan :—The bed was made just the size of a cucumber frame ; when the planting was completed, this was placed on the bed, and if there was danger of heavy rains or severe weather, the sashes were put on ; as soon as heavy frosts set in, the whole of the interior of the frame was filled with leaves, and the sashes replaced ; these were continued till late in December, when a light covering of straw or leaves was placed on the sashes, and a few boards laid on to keep them from blowing away. In this manner the whole remained until April, or until all danger of frost was over, when the leaves, frame, &c., were wholly removed, and the bed cleared up. The foliage at this period, will have just shown itself above the soil. We have never tried protection by mere covering alone, without a frame, as we think it necessary to keep off the heavy rains.

WATERING.—By the first of May, and perhaps previously, if the season should prove dry, as it often does, the beds will need occasional watering. This should be carefully performed with a fine rose watering-pot ; give a good quantity at once, every other day, rather than to just sprinkle them every evening. The watering should be continued as long as dry weather continues, but in the event of refreshing showers, may be left off.

SHADING.—Shading is as necessary to flower the *Ranunculus* in perfection as the tulip ; the foliage is injured by excessive heat, and the bright colours of the finer varieties are immediately bleached of all their richness if exposed to the hot sun. An awning may be put up of sufficient height to walk under, or it may only be placed near the bed ; but in either case, it must be rolled up or taken off at night, to admit the heavy dew ; the bed should also be exposed morning and evening as much as possible, as continued shade would have a tendency to weaken the flower stems, and draw up the foliage.

TAKING UP THE ROOTS.—A fortnight after the last flowers have faded the foliage will assume a yellowish tinge, which indicates the period for taking up the roots ; this is a very nice operation, and should not be done hastily, for fear of either destroying or losing the roots ; the best way is to pare off three inches of the soil into a

sieve, if the bed is composed of mixed sorts, and then, by shaking out the earth, the roots will remain; this we have found the most easy method. When the varieties are named, they must be taken up one by one, and put in a box labelled with the names of each. They must not be placed in the sun, but may be carried to a dry-room, where they may remain till the earth is sufficiently dry to shake off easily, when they should be put into paper bags.

OFFSETS may be treated precisely like old roots; the strongest should be selected for flowering, and the remainder planted out in a bed by themselves.

SOWING THE SEEDS.—We have not given any directions for raising seedlings; they are, however, easily grown. The seeds should be planted in boxes, in January or February, and placed in a frame or the greenhouse. The soil should be fresh loam, made fine with a small portion of leaf mould. Sow about a quarter of an inch apart, and merely sift over fine earth enough to barely cover the seeds; give a watering through a fine rose when the whole is completed. In six weeks they will be up; the boxes may be removed to the open air during summer, and the roots should be allowed to remain in the boxes the first year; the second, they may be planted out with the offsets of full grown bulbs.

THE HAUTOIS STRAWBERRY.

HAVING seen three papers in the *Gardeners Magazine* describing the Hautbois Strawberry, none of which is correct, I beg you to state what little I have seen of that plant and its fruit. I have seen the Hautbois Strawberry in its native state in the bottom of old chalk pits, in the copse woods about one mile beyond Tring, on the high ground on the left hand. This ground is a strong chalky yellow clay. The fallen leaves and other decayed vegetable matter rest on and manure these pits, and I was told that the plants produced good large berries, but were gathered by birds and children before they were ripe. To cultivate this fruit care must be taken to select the hermaphrodite plants while they are in flower, there being three sexes in the seed-bed, i. e., male, female, and hermaphrodite. When a few of the last are selected they will give runners abundantly; and when these runners are planted on a strong rich clayey soil they will produce great crops. This sexual character was first pointed out to the late Sir Joseph Banks about the year 1817, and he had great crops from these selected plants; he also supplied his neighbour, Mr. Wilmot, with plants, who had about two acres of them in cultivation in 1820; the clusters of fruit were so large that he had them tied up to small twigs. From his success I had flattered myself that this most desirable fruit would have been abundant in Covent Garden

Market, but we never see it for sale. I have also seen Mr. Oldacre produce great crops of these berries forced; those that have once tried them for this purpose will prefer them both for size and flavour. I must, however, remind your readers that it is in vain to grow this Strawberry in the usual way of the other varieties; but the nearer we come to that chalky clay, or strong loamy ground highly manured, such as Mr. Wilmot's is, the greater will be our success. I have been rather tedious, but my wish is to see the Hautbois the leading Strawberry in forcing and in cultivation; as it is the best flavoured, and the best bearer where the ground will suit it. I keep the hermaphrodite plants in the garden, but we never see fruit, although they flower very freely; the ground burns up in the first dry weather in April and May, and prevents them coming to perfection.—*W. Anderson, Chelsea Gardens.*

ON THE PINE-APPLE.

AT this season of the year plants which have been properly treated are in a flourishing condition. A due regulation of the succession plants, and attention to the shiftings, high temperature, and saturation, as respects atmospheric moisture, constitutes the routine of culture. But in order to complete my series of notices of this fruit, it is essential to describe a method of treatment which came under my observation in May last. Common inspection might discover nothing particular in it—a gardener well-versed in his own practice might with apparent justice say, "I see nothing that I myself do not know and follow;" and yet, were comparisons made, here are plants, nurslings, succession, fruiters, all young, very young, in a condition of matchless excellence—high and large, yet strong, and not *drawn*—verdant, yet of a profound green—growing rapidly, yet steadily, and almost without bottom heat. Look at another set, with all advantages and "appliances to boot," and what a contrast! How are we to account for these dissimilarities? I have long known the gardener to be one of the ablest, as he is the most candid and unreserved of his profession; in general fruit-growing perhaps he excels. But the Pine-apple was not in the garden when I had previously visited it, and the surprise was therefore great as it was unforeseen.

The pits are narrow, and in a long range; the material for plunging, if so that can be styled, which consists of little more than placing the pots upon a stratum of fresh stable litter, eighteen inches deep, so that they be kept from falling over. This manure had settled to twelve inches when seen by me; the pots were shallow in it, and the heat was nothing. The pits are pigeon-holed, and flued within; strong linings are maintained higher than the holes externally, and thus the heat circulates round the pit

through the holes in the inside, by means of the internal connected flues.

M'Phael's pits give the original type. These structures comprise some minor improvements and conveniences. *Hot water* pipes pass round the pits; and by these, when required, with the dung linings, a heat of at least seventy degrees is and was maintained, even during the rigour of the late winter. No check, no retardation—one uninterrupted progress! The consequences so far were inevitable; but another point of inquiry immediately presented itself. "What staple earth, what compost, do you make use of?" The answer was, "two barrow loads of loam to one of manure; you shall see both." On inspection, the earth was perceived to be the lower or middle stratum (not the turfy) of a loam of varying texture, portions of which assumed nearly the adhesiveness of clay: the colour, a pale, almost a buff brown, proving that the tint depended upon the low oxygenation of the iron. There were very fine fibres. From a large mass, a lump, as a fair medium sample, was selected, and with the analysis of which I have been employed more or less during six weeks; it is not quite completed, but shall be detailed in an article at full length, as thereby others may also be instructed to detect the oversight, which, there is no question, has led to erroneous deductions; the manure proved to be the linings of pits, being stable-dung in a state of semi-decay. It was always passed through a coarse sieve, then mixed with the loam, which it kept open. I did not understand that any compost-heap was prepared previous to shifting the Pine. In a former article much stress was laid upon the character of loams, in consequence of the marked improvement effected by the reduced soil of couch-grass. Here, however, we have no fibrous masses; but in every instance of good Pine-growing, I have found that a loam abounding with coarse grit or reduced gravel is very unpropitious to the plants. This loam abounds in fine silex, but contains very little coarse grit or stony fragments. It is evident that the happy medium has been obtained by the union of a congenial staple and a due proportion of decomposable manure; and this nutriment, of itself of very great moment, is more than seconded by the temperature and moisture sustained during the whole term (fifteen months) of the plant's progress. Every thing proves to a demonstration that Pine-growing may be eminently successful; but to be so, accessories are indispensably required, without the possession of which no one can succeed, even to mediocrity. Mr. Knight's dry-stove culture furnishes the solitary exception.

GRASS LAWNS AND LANDS.

WHATEVER ground is intended to be laid down as grass, should be thoroughly trenched or

deeply dug, and completely cleared of all indiscriminate plants, it should then be brought to the required level, and the larger stones and rubbish raked off; the edges of the beds, walks, &c., should then be carefully formed and firmly trod and beat, and then the whole surface well rolled, that it may settle equally; and finally, the edges carefully cut with a sharp spade, it will then be ready for sowing, and the following will be found a suitable selection of grasses for the purpose:—

FOR ONE ACRE OF LIGHT SANDY SOIL.

| | | |
|------------------------------|-------|---------|
| <i>Agrostis stolonifera</i> | . . . | 1 Peck. |
| <i>Anthoxanthum odoratum</i> | . . . | 2 do. |
| <i>Festuca tenuifolia</i> | . . . | 2 do. |
| " <i>duriuscula</i> | . . . | 2 do. |
| " <i>ovina</i> | . . . | 1 do. |
| <i>Poa pratensis</i> | . . . | 1 do. |
| " <i>trivialis</i> | . . . | 1 do. |
| Italian Rye Grass | . . . | 1 do. |
| Dutch Clover | . . . | 1 do. |

FOR ONE ACRE OF STRONG LOAMY SOIL.

| | | |
|-------------------------------|-------|---------|
| <i>Alopecurus pratensis</i> | . . . | 1 Peck. |
| <i>Anthroxanthum odoratum</i> | . . . | 1½ do. |
| <i>Agrostis vulgaris</i> | . . . | 1 do. |
| <i>Festuca duriuscula</i> | . . . | 1½ do. |
| " <i>ovina</i> | . . . | 1½ do. |
| <i>Cynosurus cristatus</i> | . . . | 1 do. |
| <i>Holcus lanatus</i> | . . . | 1½ do. |
| <i>Poa trivialis</i> | . . . | 1 do. |
| " <i>pratensis</i> | . . . | 1 do. |
| Italian Rye Grass | . . . | 1 do. |
| Dutch Clover | . . . | 1 do. |

This will not be more than sufficient for the quantity of ground specified, and if it is obtained from some of the eminent seedsmen who are noted for their selections of grass seeds, the result will be most satisfactory. It should be carefully and evenly sown, and well raked in and rolled, if the weather permit. When the grasses come up, the ground should be carefully gone over and cleared of all weeds and spurious grasses, as they appear; strict attention to this will do much to ensure the future excellence of the lawn. During the first season after sowing, the grass may be mown three or four times, but not in hot dry weather, and afterwards the oftener it is rolled and mown the better.

COTTAGE GARDENING.

THE beneficial results of encouraging the cottage gardener were never more completely exemplified than they were at the Norwich Horticultural Show, on Wednesday, 5th of July. The useful vegetables and fruits on the table devoted to that class of growers afforded the most gratifying proof, that if the society had never awarded a prize among the higher class of exhibitors they had rendered a great service to the country. Onions, potatoes, cabbages, lettuces, peas, and cauliflowers, were in the very highest perfection of growth and kind, and in such quantity, too, as showed the industry of the working classes, and their vast improvement in a branch of science now happily placed within the reach of

the humblest persons. This may be called the open demonstration of what has been done, and is still doing by the society; but there are indications yet more gratifying to be found in a ride round the city. Not a cottage seems neglected; the gardens however small are fully cropped, and in good order; neatness and plenty have taken the place of dirt and poverty; and every thing appertaining to the cottage and the cottage garden exhibits a marked improvement. The exhibition of Wednesday was held in the nursery ground of Mr. Bell, at Bracondale, about a mile and a half outside the city, and there was such an assemblage of fashion and rank as perhaps had never been collected at a show before. Roses were in great perfection, but wind and sun very soon took off some of their freshness and beauty, although all the ordinary precautions were taken to prevent it. The amateurs, however, in Norwich have something to learn; they are the very people to follow out all sorts of directions, and there were among the member's classes very strong symptoms of following out the theories so abundantly supplied by a very learned person's newspaper. In one place we saw very distinctly that the "one-shift system" had settled the affairs of some once splendid heaths, though the owner seemed quite unprepared for so fatal a result. In another place skeletons of geraniums, and the wasted forms of sundry other plants, bore evidence of the virtues of guano, nitrate of soda, salt, and other *mild* and very NATURAL manures. The cottagers, who seem after all the best gardeners in the county, seemed to laugh in their sleeves at the cunning of their more wealthy neighbours. Stable dung, and the ordinary culture which has done so much for the county, seem quite good enough for these humble aspirants to horticultural honours, and never was the triumph of practice over theory more completely developed than at the Bracondale meeting. The amateur florist will be perpetually blundering so long as he chooses a theorist for his guide, and it is quite clear that some do this in Norwich. One would think it almost impossible for any one person to commit three distinct mistakes in twenty-four flowers, and each one fatal; but on meeting one of the judges, and asking why a very pretty stand of twenty-four flowers was disqualified, he showed us one flower with a card under it, one with the bast matting round the pod, a third with a split pod. Now any reader of the GARDENER would have known better than this. Again, the very idea of showing pinks on a flat surface, with the pod immersed in water, is so perfectly novel, that, except at the Horticultural Gardens at Chiswick, where any thing properly done would be a novelty, we never heard of it; and except where the only knowledge they possess comes from the same prolific source, we should never expect to see it. We should like to have seen the pinks

at night, for it is not unlikely that the water would burst the greater part of them, and we have no doubt that the one which was found burst had given way in consequence of the water; besides, there is no possible means of judging the merits of a pink, piccotee, or carnation, unless it stands fairly on a tube to show whether it will hold its proper form. If the under petals lie on a flat surface, of course it supports them whether they would hold up of themselves or not. There were some who were offended at the rejection of the unhappy stand so fated, but there were florists enough present who felt that it would do great service to the amateurs of Norwich, than whom there is not a more spirited class, and whom we should like to see profit by some of the rational instructions which may be found every week in practical works, instead of being misled by a set of theories as wild as ignorance and conceit can originate.

EARTH WORMS.

THE injury done by worms in gardens is very considerable. By their casts they disfigure walks and lawns, and, by cutting through the roots, they injure more or less all plants whatever; and particularly those which are weak, to which worms always attach themselves more than to healthy plants, also plants in pots. Seedlings of all kinds are much injured by them; because, when the point of the taproot is cut through, the seedling has no other resource, and unless it be vigorous enough to throw out lateral roots it dies.

To destroy worms is fortunately a very simple process; for such is the tenderness of their skin, that watering them with any caustic or bitter liquid deprives them of life in a few minutes. The cheapest caustic liquid is lime-water, which is made by dissolving half a pound of quicklime in 12 pints of water, and letting it stand a few minutes to clear. Before pouring it on the soil from a watering pot with a rose on, the worm-casts ought to be removed, when the effects of the water will soon become obvious, by the worms rising to the surface, writhing about there, and in a few minutes dying. To hasten their death some more lime-water should be poured on them after they come to the surface. The quantity of lime-water required will depend partly on the depth of the soil, and the number of worm-casts in a given space, and partly on the state of the weather. Least will be required in shallow soils, moderately dry; and most in deep soils, either very wet or very dry. When lime is not at hand, potash, soda, or urine may be used; and a decoction of the leaves of walnut trees, or those of hemp, tobacco, or potatoes, after being partially dried and fermented, will have the same effect. Hand-picking may also be resorted to; but this requires to be performed in the night-time, when the worms are on

the surface of the ground, or immediately after rain. Worms in pots may either be removed by striking the sides of the pots which will disturb the worms, and cause them to rise above the surface, or by turning out the ball on the one hand, and picking off the worms, which seldom fail to come to the outside. To prevent worms from entering pots, a small cap has been invented by Mr. Barron, which, when placed over the hole in the bottom of the pot, admits the escape of water, and effectually prevents the entrance of worms. It has been in use at the gardens at Elvaston Castle for several years. Oyster-shells may be used as substitutes for this cover.

ON FARM-YARD MANURE.

BEFORE the introduction of green crops, little attention was paid to the preparation or application of this manure, the most general and by far the most useful of any yet known. It was universally applied to a corn crop, rough and unfermented as it came from the homestead, carelessly thrown into a heap. The introduction of drilled crops rendered necessary a more careful preparation, especially for turnips; and great pains and much expense and labour have long been bestowed in laying it into a high square heap, and in turning it over, so that every part might be fermented and decomposed. And so far has this doctrine been carried, that our best turnip farmers reduce the heap to a black rotten mass, cold, and devoid of fermentation, which has been purposely extinguished long before the manure is applied. Some writers have even recommended turnip manure to be kept "over year;" and we find Mr. Blaikie urging the "pressed pie" of Norfolk as the result of the Holkham experience. Some such preparation is now followed by most turnip farmers. In either case a great loss of bulk is sustained; and, if we may believe our chemists, of quality also. It appears that at Holkham it is now used in an intermediate state.

This manure being now almost universally applied to green crops, it is held that less fermenting preparation is necessary for potatoes and beet, as they are much less delicate by nature than the turnip, whose tender germination requires instant and powerful support, to push it beyond the attack of its deadly enemies. This may be partly true; but there is great reason for believing that every plant and seed committed to the earth must thrive best when the soil and manure are in a state of preparation to afford food in the quickest mode to the fibres of the tender germination. Here we arrive at the grand and unsolved question, "What is the food of plants?" On this point nature has thought proper to elude our curiosity. But we know well that heat is a prime agent of vegetation; and by reasoning, *à priori*, the conclu-

sion forces itself upon us, that a cold rotten mass cannot afford the quickest support to the young plant, as all the heat of fermentation has ceased long before application. On these subjects we are obliged to reason and act from observation and experience, as the investigations of science have been hitherto confined to the matured structure, and in the opinion of many eminent men may effect but little in explaining the agencies of life. Having come to the above conclusion in the course of an extensive experience in the cultivation of turnips, I had the manure for two years in succession carted from the yard, and laid into a square heap of four feet in height, about two weeks before sowing the turnips. The dung was in fine state as to moisture and roughness, and fermented rapidly. When sowing commenced, the fermentation was strong, and a steam rose from every heap in the drills, and the field arrangements being very close, ten minutes did not elapse from the time the dung was moved from the heap till the seed was sown and pressed close down on the hot manure by a roller passing along immediately after the sower. The braid was beautiful: and over the whole turnip crop the flush of vegetation equalled or rather exceeded any crop I have seen in the best turnip districts. Three drills in two different parts of a field were tried with cold rotten dung, and most signally failed by 30 per cent., in the opinion of all who saw them. The soil was a very weak loam, and worth about £2 an acre. Succeeding experience has fully satisfied me of the superiority of this mode of application, which I suppose is similar to that now adopted by the Earl of Leicester. Attention is necessary to the state of the dung when taken from the yards, that it be not so strawy as to return to a white state when laid in the drills.

I have long been of opinion that our wheat crops lose much of the benefit of the manure by its being applied so long before the season of vegetation arrives; and I believe the more effectual mode of application would be to spread the dung on the wheat in the Spring; for, say what we may of evaporation, that doctrine does not hold good. This mode of application will appear a physical impossibility on our wheat crops; but it remains to be seen to what changes our modern system of tile-draining may lead on these soils, in rendering them more accessible, or more adapted for green crops. Whether ever practicable or not, I am satisfied of the preferable application.

Complete pulverization, and the reducing and working of land, and of blending and intimately mixing the different ingredients among which a seed is sown, and intended to grow, is held as essentially necessary in our present knowledge of the art. For it is evident that a clod is so much land lost, as the roots of plants cannot penetrate there in search of nutriment; and we

know enough of the food of plants to suppose that it must be in a state of solution, or most minute subdivision. I have long entertained an opinion derived from this hypothesis, that putrescent manures are applied in too gross a form: that they ought to be reduced, and blended as intimately as possible with the soil, in order to produce a matrix of finely divided ingredients, in which we see plants delight to live. In order to effect this object, the unfermented manure should be laid on the land intended for turnips in the Spring, and completely mixed by subsequent ploughings and harrowings. A difficulty will occur in cases of foul lands; and it may be probable that potatoes and beet may require a greater quantity of food, laying together, from their coarser habits. Yet the same reasoning may hold with all plants; for in the earlier stages of growth, the fibres of all are delicate. Experience alone can verify such opinions: and I should be very glad to have the sentiments of "Publius" and "Chemicus" on the subject. That the theory is just, I entertain no doubt; that the application is possible, is another question. I hope soon to be able to bring it under a fair experiment; and if success attend it, it will be an improvement of the right sort, "to produce a result at less cost." In order that the dung may not be too strawy, I suggest that rank straw be cut when thrown into the yard, or used as litter, for which purpose the cutters now used for cutting roots and chaff may be made to answer.

HAY-MAKING.

HAY-MAKING has commenced some time, and proceeds under rather discouraging circumstances; therefore a few practical hints at a critical season may not be inappropriate, though much has lately appeared on the subject, I say nothing on hay-making in a large way; they who are occupied in it must "pipe all hands," and even then they will have enough to do in this showery, "catching" season; but they who have a little grass, which they wish not only to save, but to house in good condition, may derive some assistance from the detail now to be given. An orchard-paddock that has, during six or more years been treated in the manner described in the article alluded to, after remaining during the cold and parching weather of May almost inactive, the herbage revived with the first genial rains, and grew with extreme rapidity. The grasses are, chiefly, the Cock's foot (*Dactylis glomerata*), which rises nearly a yard high; the rye grass (*Lolium perenne*), crested Dog's tail (*Cynodorus cristatus*), rough stalked meadow grass (*Poa trivialis*), bristly Oat-grass (*Trisetum flavescens*), and a sprinkling of Bromus, Holcus, &c., with a good bottom of white, or Dutch clover (*Trifolium pepens*). I ascribe the rapid

growth of the grasses and clover to the stimulating effects produced by the winter dressing of new loamy ashes and soots. The comparative earliness of the crop, the seeds being fully formed, called for the scythe a fortnight or more before that of meadows, closely adjoining, were in any state of forwardness, and therefore on Monday, June 25th, the wind being easterly, the grass was cut; but rain coming on in the evening, nothing more could be done. The east wind brought wet instead of fine weather, and the swaths remained *unmoved in any way* till the 28th; when at noon the sun shining brightly, and the intervening spaces having become dry, the swaths were turned and reversed, thus presenting fresh surfaces to the sun and air. This turning is of consequence after grass has lain on one spot for a considerable time; for yellowness takes place on the ground-surface, as well as in that of the swath: it is therefore more prudent simply to turn over the cut grass after it has remained under much rain, than to "ted it out" over a very damp surface. In the afternoon of the same day, the swaths were set up into largeish grass cocks, and the ground raked. Little dew was deposited, and with a bright sun and a brisk lively air on the morning of the 29th, the hay was scattered with the fork, *breaking up and separating as minutely as possible every blade and knot*; no damage—no discoloration had been produced. The grass thus spread abroad lay exposed to the sun from 11 to 3 o'clock p.m.: it was intended to turn and shake it out again; but thunder coming on, the rakes were set to work to draw the whole into windrows, from which large cocks were formed for the night. A portion however that had been most exposed, was found dry enough to be taken in, and placed upon double hurdles under a shed in the farm-yard. The 30th (Saturday) was fine and sunny till evening. The cocks were shaken out into broad beds or staddles, and there were turned a second time. By 5 o'clock p.m., five-sixths of the hay being dry, so much of it was carried and deposited upon the first quantity under the shed. That which remained, having been partially shaded by trees, was made up into two very large cocks, one under a tree; and two hurdles being placed on their ends against it, a mat or two was thrown across them: the other cock was set up against a paling, and was equally guarded: thus everything remained secure during the Sunday, though a vast quantity of rain fell. The sun breaking out, the mats were taken off during the gleam, and were replaced at night. Monday morning was fine: the two cocks were spread into staddles, and the hay being quite made by four o'clock of the afternoon, it was then carried to the shed, *pulled* till the exterior surfaces were quite even, the pullings deposited on the top, and the whole left to settle. The simple process by which this small breadth of hay was made and secured,

consisted in turning the swaths once, then in placing the grass in small cocks for one night: in *thoroughly* scattering the grass over the entire surface of the ground, exposed to the utmost influence of sun and wind; then in depositing the half-made hay in secure cocks for one night; finally, in exposing it to the sun in beds, six or seven inches deep, to carry off the moisture *transpired* in the cocks, and turning the bed once prior to carrying the hay. Small quantities of hay are perhaps more effectually protected under an open shed, after the fashion of the Dutch barns, open on all sides, but roofed, than in rick: this remains however to be proved; but one thing is certain—that the simple processes described have made the hay *perfectly*, that no injury has been sustained during a great prevalence of wet, and that three bright days would have sufficed, in lieu of a week, had it not been for the delay occasioned between the forenoon of Monday, and that of Thursday, by excessive rain.

These remarks have been elicited by witnessing the havoc occasioned by remissness, and want of method in two neighbouring fields of at least six acres. During ten days, the grass has never once been fairly shaken, nor timely secured in cocks, and it is carried *in rain*. They also are offered in the hope that many may be induced to give their minds as well as strength to a work, which, while it proves that what is once *thoroughly done* is comparatively easy in its accomplishment, will also bring with it its own certain reward and satisfaction.

WEEKLY JOURNAL OF GARDENING.

THE PICCOTEES and CARNATIONS require daily watching: as soon as the pods intended to be bloomed, have swelled pretty much they must be tied half way down with a piece of matting or worsted, and the five divisions of the calyx should be opened down to the tie; the object both of tying and opening the division above the tie being to prevent the calyx bursting on one side or opening uneven. It is generally well to let the pod show colour at the point, when by taking hold of the opening point, and tearing them down one at a time to the part that is tied, the flowers open free and all round alike; they must also be shaded from the sun as well as protected from the wet.

LAYERING may be begun wherever the grass has grown long enough, and particularly if the stock be large; for, unless begun early, there will generally be some neglected till too late to root well.

THE KITCHEN GARDEN requires much the same attendance as has already been directed. WEEDS must be kept under. TURNIPS may be sown for a full crop. CELERY, as we always recommend in small gardens, should be planted

out at various seasons, and if there be any left in the seed bed, another row will come in handy. Earth up that which is advancing. LETTUCES in the seed bed may be thinned, and those taken out may be planted.

July 15, 1843.

PAXTON'S MAGAZINE OF BOTANY.

OF the periodical works on Floriculture, this decidedly takes the lead, not only from the fact of the plates being well executed, but also from the great facilities which Mr. Paxton commands to secure the *earliest* figures of novelties. Edwards' *Botanical Register* used to bear away the palm in this particular feature, but it is as much as can be said if we give that credit for keeping pace with *Curtis's Magazine*, while the present work outstrips the whole of its contemporaries. The following is one of the papers in the *Magazine of Botany* for July:—

HARDY DOUBLE FLOWERS.

DOUBLE flowers are necessarily favourites with almost every one, being, with few and rare exceptions, much more beautiful than the single forms of the genus, and also, in the majority of cases, evincing the exercise of that skill, which, when attended with favourable results, is always so pleasing.

As exhibiting a curious fact in structural transformation, they are likewise very interesting; for it is now pretty well known that all the double flowers produced by art (and probably those found so in a state of nature have the same origin) have undergone this singular change, whether by high culture or otherwise, through the conversion of the stamens of the flower into petals. This is clearly proved by the absence of stamens in double blossoms, and by the frequent existence in them of petals in only a half-transformed condition, having the half-stamen on one side, and the half-petal on the other.

That the occurrence of such a phenomenon at all favours the botanical theory which reduces all the floral parts of plants to leaves in a metamorphosed state, is exceedingly questionable; since, to confirm a belief of that character, the circumstance should be so common, where the conditions of growth are merely natural, as to render departure from it the extraordinary thing: whereas it need not be asserted that the direct opposite of this is the case.

Regarding the cause of double flowers, and the means of obtaining them, no certain knowledge is current. The general opinion, founded, most certainly, on very rational premises, is that propitious culture in a rich and highly congenial soil, is the instrument in effecting the change. This hypothesis is based on the fact, that many of the plants, which, with Nature's assistance alone, have never borne other than single flowers, have, when subjected to the more re-

finer processes of cultivation, been made to produce those of a double kind. Another piece of presumptive evidence on the same side is, that some double-blossomed plants, if treated in the artificial manner which it is thought first altered their character, retain their double properties; but, when placed in other and less suitable circumstances, pass back again into the single state.

An instance, which appears to prove the direct reverse of all this, will probably be familiar to those who are accustomed to look on things with an observant and scrutinizing eye. It is that of the common meadow Crowfoot or Buttercup (*Ranunculus bulbosus*), which, when growing by road-sides or in other similar places, where it can be supplied with little nourishment, often becomes, during the summer, under the influence of partial drought and exhaustion, changed into a double or semi-double form. Possibly, other like cases, though not of such frequent occurrence, may be easily met with; showing that at least it is not superior culture of itself that effects this transformation of flowers in all plants that exhibit it.

The rule, then, as far as physiological data and ordinary experience can be made to educe one, seems to be that double flowers are an extra development of inferior organs, requiring an additional stimulus to occasion this unusual expansion. But, on the other hand, if that stimulus is carried too far, or rendered too powerful, its effect will be, not the changing of the floral stamens into petals, but the production of an undue quantity of leaves on the plant, actually impoverishing and deteriorating the ordinary blossoms. And, lest it should be assumed that the stimulus we speak of is to be solely one afforded by nutritive soil, we must add that this is merely a part of the process, the principal feature of which is the repeated and even annual removal of the plants to a new situation and soil.

We allude here, of course, to the method which should be adopted in attempts to render the single flowers of any plant double, and not to that which is necessary to be pursued with plants that have already been made to bear double flowers; although, with particular species, this routine is as requisite after as before the change, to prevent deterioration. So unacquainted are we with the laws which govern the matter, that we are presented with instances in which the flowers of a plant become accidentally double, and only on part of the specimen: thus giving the means of perpetuating the variation, without furnishing any clue to its cause.

Thus much premised, we shall turn our attention more especially to those double-flowering plants which are of a hardy character, and which, therefore, every person possessing a garden may easily cultivate. For this last reason, and because the class contains many species, the beauty of which is but very imperfectly known

to a large proportion of growers, we will give a list of the best sorts which are known to us, and which we can decidedly recommend as ornamental:—

The double-flowered Lyng (*Calluna vulgaris, flore pleno*). A low shrub, with deep pink blossoms, and flowering through the whole of the spring, far into the summer.

The double-blossomed Furze (*Ulex Europæa, flore pleno*). A tree-like shrub, attaining the height of six or eight feet, with rich orange-coloured flowers, borne almost all the year, but especially from April to July.

The double-flowered common Sun-Rose (*Helianthemum vulgare, flore pleno*). A dwarf trailing shrub, with yellow blossoms, opening in May, and continuing till late in the autumn. Several other varieties of the same genus have double flowers, and are very showy.

The double-flowered Snapdragon (*Antirrhinum majus, flore pleno*). A half-shrubby plant, rather more than a foot high, of which there are varieties with flesh-coloured flowers, and with those of a deep blood-colour, blooming from June to September.

The double red official Pæony (*Pæonia officinalis rubra*). A fine herbaceous plant, about eighteen inches in height, with splendid red flowers, expanded in May and June.

The double-flowered narrow-leaved Pæony (*Pæonia tenuifolia plena*). A dwarfer plant than the last, with rich red flowers, from May to June.

The double-flowered Rocket (*Hesperis matronalis, flore pleno*). A fine herbaceous plant, of which there are two or three varieties with lilac and white-coloured flowers, produced from May to August, and very fragrant.

The double large-flowered Larkspur (*Delphinium grandiflorum, flore pleno*). A very handsome herbaceous plant, bearing the most brilliant blue flowers from May to September.

Mr. Barlow's Larkspur (*Delphinium Barlowi*). A hybrid herbaceous plant, three feet high, of a noble habit, and having large dazzling blue blossoms from June to September.

The double-flowered Chinese Larkspur (*Delphinium Chinense, flore pleno*). A splendid dwarf perennial, producing many large blue flowers from June to September. There are other double varieties of Larkspur almost equally good, among which the German annual ones are conspicuous.

The double Wallflower (*Cheiranthus cheiri, flore pleno*). A beautiful sub-shrubby plant, with yellow flowers, borne from April to July. Another variety, with dark brownish blossoms, is alike handsome.

The double-flowered Gillyflower (*Mathiola incana multiplex*). A pretty little shrub, with various-coloured flowers, appearing from May to November. The other stocks, which are varieties of this genus, are well known, such as the Brompton and annual kinds.

The double meadow Cuckoo-flower (*Cardamine pratensis plena*). A showy herbaceous plant, a variety of a weed common in low pastures, and producing its lilac blooms in April and May.

The double-flowered Dropwort (*Spiræa filipendula plena*). A beautiful dwarf herbaceous plant, the single form of which is abundant on English commons. The double one has white flowers, which appear from June to October.

The double-flowered Meadow-Sweet (*Spiræa Ulmaria multiplex*). A handsome herbaceous plant, taller than the last, fit for any moist situation, and bearing white blossoms from June to October.

The double-flowered Marsh Marigold (*Caltha pa-*

lustris, flore pleno). A very specious herbaceous plant, fit for the margins of ponds, or swampy situations, and having rich yellow flowers in April and May.

The double-flowered acrid Crowfoot (*Ranunculus acris, flore pleno*). A fine herbaceous plant, producing yellow flowers in June and July.

The double-flowered bulbous Crowfoot (*Ranunculus bulbosus, flore pleno*). Likewise a showy plant, with similar flowers to the last, and blooming at the same time.

The double plane-tree-leaved Crowfoot (*Ranunculus platanifolius, flore pleno*). A fine herbaceous plant, bearing white blossoms in May and June. There are several similar varieties of *Ranunculus* with double flowers, and the numerous Asiatic kinds, so much multiplied by florists.

The double Globe-flower (*Trollius Europæus, flore pleno*). A good herbaceous plant, with yellow flowers in May and June.

The double-flowered granulated Saxifrage (*Saxifraga granulata plena*). A pretty herbaceous plant, gay with a profusion of white flowers in May and June.

The double corniculated Lotus (*Lotus corniculatus, flore pleno*). A neat, trailing, herbaceous plant, covered with yellow flowers in June and July.

The double-flowered Ragged Robin (*Lychnis flos-cuculi plena*). A showy herbaceous plant, about a foot high, with large pink flowers, and blooming from May to August.

The double-flower Feverfew (*Pyrethrum Parthenium, flore pleno*). A pleasing plant, herbaceous, and with white flowers in June and July.

The double wood Wind flower (*Anemone nemorosa, flore pleno*). A beautiful little plant, producing its pinkish white blossoms in April and May. The varieties of *A. pavonina*, *A. coronaria*, and *A. palmata*, are all very varied and handsome.

The double-flowered Meadow Rue (*Thalictrum anemoides, flore pleno*). A good herbaceous perennial, about a foot in height, producing whitish yellow flowers in April and May.

To this list may be appended double-flowered Daisies, Primroses, Violets, Polyanthuses, Chrysanthemums, Roses, Cherries, and Peaches, all of which are superior to the single-flowered forms of the same species, and possess an interest which greatly commends them to the attention of the cultivator.

In regard to the cultivation of this diversified group of plants, a very few observations will suffice, as their treatment is of the most common description. All the herbaceous kinds (and these constitute the great majority) are propagated either by divisions or cuttings, the latter method being adopted with such as partake likewise of a shrubby nature, or are what is usually termed suffruticose. Of this last class, the Wallflower is an example. These should have the cuttings taken off about the month of May, and placed beneath a hand-glass at the foot of a south wall, where, with a slight shading, and only a moderate quantity of water, carefully supplied, they will readily strike root. Those which are increased by division, such as Delphiniums, Spiræa filipendula, &c., should be separated as early as possible in spring after the severe frosts have ceased, and the exterior portions of the plants should invariably be chosen

for forming new ones, as these are always the most healthy and vigorous.

Such plants as Daisies, Primroses, Polyanthuses, &c., which easily degenerate, ought to be divided every season, or at least every other year, and shifted to a fresh spot; for there is nothing so beneficial to them, or that preserves them so well against deterioration, as this frequent removal.

Wallflowers, Snapdragons, and many others which flower twice in the season, should have their old blossoms picked off as soon as they begin to decay; as, besides promoting their future productiveness, this tends much to invigorate the plant and recruit all its energies.

The Helianthemums and *Lotus corniculatus* are beautifully adapted for growing on rock-work, or on narrow borders on which a few pieces of ornamental rock are scattered. To increase the double Stocks, it is a common practice to save seed from those rich and true-coloured single ones that happen to be growing near the best allied double ones, and when the seedlings make their appearance, to discard all the strongest and tallest of those which first present themselves, as these are generally single.

We have thus hurriedly gone over the principal plants in our list, and we have only to suggest, that the remainder of them are all more or less allied to some of those to which we have specifically alluded, and, by this palpable resemblance, it will be easy to ascertain to which of those their treatment should be assimilated. We have not entered largely into the question of their culture, because it is mostly of such a simple kind that no farther directions are needed."

We could hardly have selected a paper upon so acceptable a subject for months past. It is chiefly in the descriptions of rare plants that the work so auspiciously shines; and, taking into consideration that there are four plates and a large quantity of matter for 2s. 6d., we may say it is the cheapest, as well as the best, of the present periodicals.

THE GARDENER'S NOTE-BOOK.

ACORNS.—Before the Conquest the Wealds of Sussex (which is the largest valley in Europe) were one continued forest from Hampshire to Kent, principally of oak trees, that were only valued for the number of swine which the acorns supported. Acorns are but little used at present except to fatten hogs and deer, but they would be found an advantageous food for fowls were they dried and ground into meal. Pliny states that acorns beaten to powder, and mixed with hogs' lard and salt, heal all hard swellings and cancerous ulcers. John Ellis, Esq., discovered that acorns can be preserved in a state fit for vegetation for a whole year by enveloping them in bees'-wax; other seeds may be conveyed from distant countries by the same means.



THE CIRCULAR OUTLINE OF THE DAHLIA.

THE great fault of many Dahlias is a vacancy between the petals, which form notches all the way round, and makes every one seem independent of the rest, instead of blending in one complete flower. This fault is exemplified in the above sketch, existing in the smallest degree, but still the very interruption of the outline is a fault. The small degree in which it is shown here would be almost unnoticed by any but a severe judge, but when a variety in which it does not exist at all is compared with it, even this slight detriment will look important. In the same way is the seeming independence of all the petals a fault. A fine variety, such as the Springfield Rival, in its best condition, appears as if the divisions of the petals were only so many marks. The mathematical stars made

with compasses are not more true, and herein is the falling off of modern varieties most conspicuous. This fault prevails in all flowers that are cupped too much, and Dodd's yellow, which came out last year, although occasionally very fine, is nine times out of ten spoiled by this particular fault. The petals seem as if they did not belong to each other; and although the flower is very double, and occasionally fine, the flower will always show too much of the under part of the petal, and, unless it alter its character, it will not be found so useful now that the novelty has partly worn off. We have indicated, as we before observed, that in the above sketch they exist in the slightest possible degree, yet it may be useful in determining the merits of flowers which are nearly equal.

AIR NECESSARY TO THE ROOTS OF PLANTS.

SIR.—I have just turned over your work, and approve its plan. Its object, like all other similar publications is the improvement of horticulture in all its branches, but particularly floriculture—that fascinating and now so popular study. As a record of novelties, whether on the science, practice, or special objects of the business, it is attractive; and its very reasonable price will secure for it, no doubt, an extensive sale, especially if the future numbers contain as great a variety of interesting matter as appears

by the table of contents appended to the number now before me.

Much has been, and continues to be written, on the general subject, so that it is no easy matter to find subjects for original essays, were it not that (and particularly on floriculture) new beauties are ever being brought forward, and which it is necessary should be reported of as early as possible for the information of florists, whether professional or amateur. This is a source whence many annual volumes may be

supplied; and it will be a branch of your publication which will be increasingly interesting. In the higher studies of scientific botany there is much room for improvement. The natural system is not yet complete; morphology requires elucidation; organography requires to be better defined; and physiology needs to be rescued from the obscurities with which it is environed. Discussions on these subjects will employ your own and coadjutors' pens for years to come; and be assured that a little science intermixed in your practical reports and observations will greatly enhance the character of your publication.

Hoping you will excuse the admonitory complexion of the preceding remarks, I would on the present occasion beg leave to add a few observations on a subject which, though not altogether new, is one which every gardener and florist should be cognizant of, as very much affecting plants of all descriptions, more particularly those in pots. That no plant can live, and thrive, and come to perfection, without enjoying some degree of air, is universally admitted and acted upon. United with light, it gives colour and consistence to the wood and foliage, and flavour to the fruit. From the air, plants derive a principal part of their nourishment; and when united with light they constantly aspire to it, however or wherever they may be placed. The open air is the natural station for the branched head of all plants, while the earth is the natural of the roots; but it is not so apparent that air is as necessary to the roots as it is the branches. Ploughing, trenching, digging, and all other methods of breaking the surface of the earth, appear to be executed more for the purpose of ameliorating and loosening the earth for the reception of seeds or plants, than for rendering it pervious to the atmosphere and its components, though it may be safely averred that the admission of air to the roots is much more exciting to the growth of the plants than the simple disturbance of the earth can be—for, if disturbed at an improper time, that is, when too wet, the operation will do harm instead of good.

Gardeners in the course of their practice soon found that for their potted plants *too-finely sifted* compost did not favour the growth so much as coarser materials; hence, the use of turf, only chopped up with the spade, was found sufficient for increasing the growth of potted plants, rather than putting it through the sieve. Hence, stones and broken crocks were advised to be mixed in the compost; and for the same purpose it was advised to fill the pots one-third full of loose materials to ensure efficient drainage.

Now, all these expedients, although extensively employed for the purpose of keeping the soil loose and dry, which is perfectly proper management, the real consequence and salutary effect was the freer and constant admission of air to the working roots, which spread themselves

as the air-filled interstices of the prepared compost, and gained additional vigour from the organisable gases attracted therefrom.

We often see remarkably fine-grown specimens of greenhouse plants in cottage windows, and which is solely attributable to the slovenly manner in which the plants are kettled, or panned, or potted, and there being no sieve in the cottage. Even one of our most eminent commercial plant growers has adopted the cottage style of causing his potted geraniums to grow as luxuriantly in large pots of rough turfy soil, as they do when turned out in the borders during summer; and this is merely by the plants having a greater share of fresh air to the roots, and less risk of it being excluded by an excess of water.

SENEX.

TANKS FOR THE FARM, GARDEN, AND HOUSE.

THE necessity of saving rain water is very obvious to all who know its superiority for general use. For plants, nothing can equal it—no river water is so soft or so pure. The economy of saving the drainings in the dung yard to use on the farm or garden requires hardly a word of explanation. It stands to reason, that every drop of the moisture is full of the nourishment which land derives from manure; and the fact of its being allowed to waste by soaking away into the ground which is never cultivated, is discreditable to every farmer or gardener who wilfully suffers it. A practical man, who estimates properly the value of rain water, writes thus:—

“In the Isle of Thanet, that north-eastern point of Kent, there are few establishments which do not contain tanks capable of receiving from five hundred to five thousand gallons of rain-water; and in Berkshire, a few of these recipients, of smaller dimensions generally, are met with here and there.

Their construction is simple, and the expense trifling, if compared with their extreme utility. A hole is dug in any convenient part of the premises, and the earth is thrown out to the required depth and breadth. It is usual to make a cylindrical excavation, resembling the shaft of a well, but broad in proportion to its depth; and if the earth be of soft mouldering texture, this figure affords most strength; but if the ground be clayey, a square figure may be adopted. The floor and walls should be built of nine inch brick-work; and it will be better to lay every brick in cement. When the work has been a little consolidated, a coating of cement should be applied; it must be perfectly water-tight, but it may be rendered so by laying on *one-fourth* of an inch of the prepared cement, mixed thoroughly with about one-third part of coarse, sharp, or, rather, sea sand. The top of the tank should be effectually secured, either by an

arch or dome of brick-work, or by strong and sound planks, steeped in Kyan's solution, and covered with turf, gravel, &c. A man-hole for cleaning out the tank occasionally ought to be made, and an orifice left for the pipe of a common pump. These general facts admit of particular local application; but no one who has not experienced the comfort and advantages of the tank can appreciate its conveniences. Its dimensions should be determined by the consumption of water, compared with the extent of roofing, &c.; for every drop of the rain water which falls on clean parts of the premises ought to be caught. Pigeons form an objection, as they cause much dirt; but the rain water may be made to pass through a tub, containing charcoal and coarse sand, and will in the end become fine. Rain water is the finest of all water for table use, if it previously filtrates through a stone or other percolator. In a word, the structure we recommend, and its appendages, require only to be duly known to be universally introduced."

Their application to the dung yard, and the advantage of carrying drains from the stables, pig-sties, and cow-houses, must be obvious. The water thus impregnated with manure may be used in the garden with a common water-pot, or on the farm by a water-cart or barrow, and thus a rich fertilizer, that would otherwise be wasted, will be distributed over the land, much to the advantage of the crops, be they what they may.

ON THE AGAVE AMERICANA, GREAT AMERICAN ALOE.

"SCARCELY does there exist a tribe of savages in the world who are not acquainted with the art of preparing some kind of vegetable drink. The wretched hordes which wander in the forests of Guiana, extract from the fruit of different palms a beverage, which is as palatable as the European orgeat. The inhabitants of Easter Island, confined to a mass of barren, springless rocks, mingle the expressed juice of the sugar cane with the briny water of the sea. Most civilized nations derive their drink from the same plants as afford them food, and whose roots and seeds contain the saccharine principle mingled with the farinaceous. In Southern and Eastern Asia this is rice; in Africa and Australia the roots of ferns, or of some arums; while in the north of Europe, the cerealia afford both bread and fermented liquors. Few are the instances of certain plants being cultivated solely with a view to extract beverages from them. Vineyards only exist west of the Indus; in the Old World, and in the Golden age of Greece, the culture of the grape was confined to the countries lying between the Oxus and the Euphrates, in Asia Minor, and in Western Europe. In other parts of the world, nature certainly produces several species of wild vine; but nowhere has man at-

tempted to collect them around them, and improve their quality by cultivation.

The New Continent presents the instance of a people who derived their drinks, not only from the farinaceous and sugary substance of maize, manioc, and bananas, or from the pulp of some species of mimosa, but who cultivated a plant of the pine-apple family for the express purpose of converting its juice into spirituous liquor. In the vast plains in the interior of Mexico, there are large tracts of country where the eye discerns nothing but fields planted with the pitties or maguay (*Agave Americana*.) This plant, with its leathery and thorny leaves, and which, with the cactus opuntia, has become naturalised ever since the sixteenth century, throughout Southern Europe, in the Canary Islands, and on the African coasts, imparts a most peculiar character to the Mexican landscape. What can be more strongly contrasted than a field of yellow wheat, a plantation of the glaucous Agave, and a grove of bananas, whose lustrous leaves always preserve their own tender and delicate hue of green! Thus does man in all latitudes, by introducing and multiplying the various vegetable productions, modify at his pleasure the aspect of the country around him!

In the Spanish colonies there are several sorts of maguay deserving of careful cultivation; some indeed, which, by the length of the stamens, the mode of division of the corolla, and form of the stigma, may perhaps belong to separate genera. The maguay, or metl, which is grown in Mexico consists of several varieties of the American Aloe (*Agave Americana*), so common in gardens, which has yellow, fascicled, and straight flowers, with stamens twice as long as the divisions of the corolla. This must not be confounded with the *A. Cubensis* of Jacquin, *A. Mexicana*, Lamarck, *A. Odorata*, Persoon, which has been erroneously supposed to be the metl or maguay of Mexico, but which is extensively grown in the Caraccas, where it is called maguay de cocuy.

These plantations extend wherever the Azteque language is spoken; they cease to the north of Salamanca, and are seen in the greatest luxuriance in the valley of Toluca and the plains of Cholula. There the agave plants are set in rows, distant fifteen decimetres from one another. The juice or sap, commonly called the honey, from its abundant sweetness, is only afforded when the flowering stem is about to appear, so that it is of great importance to the cultivator to ascertain precisely at this period. Its approach is indicated by the direction of the root-leaves, which the Indian always watches and examines with great attention, and which, formerly recurved, suddenly take an upward direction, and approximate as if to enclose the incipient flower stalk. The bunch of central leaves (co-razon, the heart), next assumes a livelier green, and lengthens considerably; indications which

the natives assure me hardly ever fail, and to which may be added several other less striking appearances in the general aspect of the plant. Daily does the cultivator examine his agave plantations, to watch those individuals which promise to bloom, and if he himself entertains any doubt, he appeals to the village sages, the old Indians, whose long experience gives them an unerring precision both of touch and eye.

At eight years old, or thereabouts, the Mexican agave generally shows signs of inflorescence, and then the collection of the juice for making pulque begins. The bunch of central leaves, or corozon, is cut through, the incision gradually enlarged and covered by the side leaves, which are raised up and tied together at their tips. In this cleft the sap of those parts which were destined to form and nourish the gigantic flower stem is deposited, and this vegetable spring flows for two or three months, and may be tapped three times a day. The quantity of sap is enormous; and the more surprising, as the agave plantations are always made by choice on the most sterile soil, frequently on mere shelves of rock, scantily covered with vegetable earth. Each plant is calculated to yield about one hundred and fifty bottles; and at Pachuca, the value of a maguay near flowering is from twenty to twenty-five francs, or five piastres. Still, as with the vine, which may bear a greater or less quantity of grapes, the produce is apt to vary, and cannot be precisely calculated. Instances have, however, been known, of a parent bequeathing a plantation of maguay, from seventy to eighty thousand piastres.

The cultivation of the Agave is attended with many real advantages above that of maize, wheat, or potatoes, as this sturdy harsh and fleshy-leaved plant is uninjured by the occasional drought, frost, and excessive cold, which prevail in winter on the lofty Cordilleras of Mexico. It dies after having flowered, or when the central bunch of leaves is cut away, and then a number of suckers spring from the parent root, which increase the plant with extraordinary rapidity. One acre of ground will contain from twelve to thirteen hundred plants of maguay, of which it may be calculated that one in every thirteen or fourteen is always affording honey. Thus the proprietor who sets from thirty to forty thousand maguays is sure of leaving is family rich; though a man must possess patience and resolution to devote himself to cultivating what only becomes productive after an interval of fifteen years. In good soil, the Agave blossoms at the end of five years; while in poor ground nothing can be expected under eighteen years; and any artificial means by which the flowering state is unnaturally accelerated, only destroy the plant prematurely, or materially lessen the amount of sap.

The honey or juice is of an agreeable bitter sweet flavour, and ferments readily from the

sugar and mucilage with which it abounds, this process being hastened by the addition of some old and acid pulque. This vinous liquor resembles cider, but diffuses a disgusting smell of decayed meat, which Europeans have some difficulty in overcoming. Those, however, who have accustomed themselves to the beverage, consider it as strengthening, stomachic, and particularly nutritive, recommending it peculiarly to persons of a meagre habit; and I have seen many whites who, totally discontinuing water, beer, and wine, drink only the pulque, like so many Mexicans. The cause of the fœtid smell of this liquor is variously attributed to the mode of preparation, the manure used for the soil, and the different materials in which the fermentation is carried on; and I only regret that I was unable, for want of proper apparatus, to ascertain this curious point in vegetable chemistry. By distillation a most intoxicating liquor is obtained from pulque, which is called Mexical, or aguardiente (fire water) of Maguay. The plant which is preferred for this purpose, appeared to me smaller, and its foliage more glaucous than the common kind; but not having seen it in blossom, I cannot pronounce it to be specifically distinct.

But not only is the Agave the Mexican vine, but it holds the place of Asiatic hemp and the Egyptian paper reed (*Cyperus Papyrus*). The ancient manuscripts of this country consisted in hieroglyphics, often inscribed on a paper made of numerous layers of the Agave leaf, macerated in water, and glued together in the same manner as the pith of papyrus and the bark of the paper mulberry of the Pacific Isles. I brought away many ancient specimens of this fabric, some as thick pasteboard, others as thin as fine India paper, which are the more interesting, as all the Mexican records hitherto discovered, and still preserved at Rome and in Spain, are inscribed on the skins of the Mexican deer. No thread is so much prized by physicians in Europe as that which is extracted from Agave leaves, which are sometimes ten feet long, fifteen inches wide, and eight thick, because it is not liable to twist; though the fibre of the New Zealand flax (*Phormium tenax*) excels it in tenacity. Twine, thread, and rope, are made of it; the latter is employed in the mires, and on the western coast, for rigging the ships. The common juice of the plant or that which it yields when not about to blossom is highly caustic, and are useful for cleansing wounds; while the thorny points of the leaves, like those of the cactus, used to serve the Indians for nails and needles. The Mexican priests were accustomed to inflict wounds in that manner on their breasts and arms by way of expiation, as do the Buddhists in Hindoostan.

Rarely as the American Aloe blossoms in this part of Europe, a friend of mine, who lately

visited the shores of the Mediterranean on the north of Spain, tells me that the brown withered flowering stems often stand there as tall, strong, and thick as the masts of small vessels in a harbour, and are sometimes used for thatching. The height of this stalk varies from twenty to forty feet, and expands like a rich candelabrum, its arms clustered with golden yellow flowers. An extract from the foliage, when made into balls, will lather water like soap; and finally, the centre of the flower stalk cut longitudinally is by no means a bad substitute for the European razor strop, owing to the minute particles of silex forming one of its constituents, in the same way as the Dutch rushes, or stems of the horse-tail (*Equisetum*) are employed to polish ivory and brass. My friend, William Christy, Esq., when writing from Guernsey, last autumn, (1837) says, "in this delightful climate, an *Agave Americana* is just coming into flower, in the street of St. Pierre Port. It is twenty-five years old, and already thirty feet high; and has always stood in the open air, summer and winter, without any protection. — *Essai Politique sur la Roy-aume de la Nouvelle Espagne*.

A GROUND PLANT FOR SHRUBBERIES.

THE amateur gardener—the occupier of a small rural villa—the more humble cottager—every one, indeed, who loves ornamental gardening as an active pursuit, is more or less attached to a shrubbery; but many find it irksome or difficult, from want of time, to keep the ground about the shrubs in neat and trim condition. The trees grow rapidly; herbaceous and annual flowering plants succeed very indifferently in their vicinity; and thus, from one cause or other, the surface of the soil becomes unsightly. Perhaps there is not a more difficult operation in the routine of gardening than to dig, turn, or hoe the surface of ground compactly clothed with shrubs; and yet, if one or other be omitted, it becomes a scene of litter and neglect.

The only proper alternative is, to cover the soil with some strong, yet unobtrusive evergreen; and none, at present, appear so entirely eligible as the dwarf periwinkle. The herbage of the plant is perfectly fine, of a bright, glossy, yet profound green, excepting in its season of growth—the leaves clothe the whole of the trailing stems, and the numerous flowers dot and spangle the plant at various seasons of the year. There are three varieties—the azure blue flower is the most common, the pure white is rather more rare. Another with palish purple, or peuce-coloured semi-double blossoms, is seldom seen; but it is extremely pleasing, particularly when on rock work, or in small patches in the little round or oval beds made upon lawns.

Vinca belongs to the natural order *Apocynæ*.

It is not remote from the beautiful genus *Nerium*; and in common with it, possesses that peculiar characteristic, an oblique or twisted corolla, which gave origin to Linnæus' natural order *Contortæ*. The flowers have one petal, they are salva shaped (*hypericateriform*), and the seeds are enclosed in a leaf-like capsule, termed *follicle*. The calix is of one leaf, the five segments of which, in the *minor species*, are lanceolate; the stems are procumbent and trailing, but occasionally raise themselves to an upright position; and they then present beautiful tufts or masses. The flowers are produced singly upon stalks from these erect stems, and thus are rendered conspicuous at an early and very late season of the year, when such lively beauties are particularly desirable.

The plant grows freely in any good garden soil; but being a native of woods, bushy places, and hedges, appears to delight in the vegetable earth of decayed leaves; hence, it will be encouraged by scattering, before the winter, a little leaf mould all over it. As roots are produced at the axles or joints of the trailing shoots, this light manure promotes their development, and adds richness to the verdure of the foliage.

We hope that these hints will tend to introduce this fine evergreen to more general notice; it will never disappoint the expectation of those persons who appreciate our motive in thus advocating a method of covering the ground of small shrubberies, which is rarely adopted by practical gardeners.

DEBILITATED VINES.

It is a very common thing to find, on taking a garden or house, Vines which have been neglected, and which seem almost past recovery. The best way to save these, is to cut them in very close, upon the spur system, removing a large portion of the old wood, and try it one season; but if the grapes come small, and the Vine makes no good new wood, there is something bad at the root. Mr. Simpson, an excellent practical gardener some time, and perhaps now, with John Bradford Esq., of Bradford, had very decided notions upon this subject, he said on one occasion:—

"As it not unfrequently happens that Vines become debilitated, and neither produce fruit in quantity or of quality to compensate for the labour and expense bestowed upon them, it becomes a desideratum what means to adopt in order to remove the evil. As there are various causes which may prevent success in the culture of the Vine, it would probably occupy too much of your valuable space to attempt to notice them generally. I shall therefore merely advert to the two principal efforts made in order to improve them. As both methods have each their supporters, I shall here venture to give my opinion

to show to which method I give preference; and I shall afterwards show that I have been influenced by the same opinion in my practice, which has hitherto yielded me entire satisfaction, I hope that these remarks may be of use and encouragement to amateurs and others interested in the culture of the Vine. These observations, it will be perceived, are entirely applicable to Vines which do not produce fruit to please, on account of defects in the border. When this is the case, as a natural consequence, an effort is made to remove the cause: some being determined to do this effectually, dig up the Vines, and take away the soil of the border, bring in fresh compost, and plant young Vines; others fork up the roots carefully from the border, take away the old soil, bring in fresh compost, and replant the same Vines, but injuring the roots as little as possible in the operation; others prefer a partial renovation, supplying as large a quantity of fresh compost as they possibly can, without disturbing their roots by taking away the old soil and replacing with fresh compost. How far some may have succeeded by the two last modes of removing the defects in the borders, and of improving their Vines, I will not say further than this—whatever cases have come under my observation have all failed, more or less, to give permanent satisfaction. I therefore strongly recommend all who may have Vines that are in the least debilitated to remove them at once, soil and all; then begin and drain the border properly (if this has not already been done), and bring in fresh compost, containing a suitable capacity for retaining water, with a proper friability or looseness of texture, and calculated to yield sufficient nutriment to invigorate the plants; then plant young Vines, of one or two years' growth, from single eyes, and under good management a crop of fruit will be obtained the second season. Many are led to tamper with old Vines for years, which neither produce fruit in quantity or quality to give satisfaction, and this is generally to be attributed to the fears they have of being without fruit for a length of time, which is frequently imagined to be far greater than needs be."

This we verily believe, for Mr. Simpson has himself gathered fruit the first year without hurting the Vines. We should unquestionably throw a Vine away at once, unless it produced fruit in perfection, or very strong wood, the first season after cutting in.

PLANTS AND ANIMALS.

RAYE, Linnæus, and the earlier botanists considered corals and sponges as vegetables, but later observations have shown them to belong to the animal kingdom. The appellation of Zoophytes stands an evidence as to the original vulgar notions respecting this class, and they are by the greater part of persons considered to be

intermediate between animals and vegetables. The idea of an animal is conveyed in a substance called animal substance, possessed of internal organs and faculties of sensation, motion, volition. Vegetables, again, are known as constituted of vegetable tissue, which includes, as commonly termed, the root, stem, leaves, and flowers, the structure less highly developed, having an internal structure, but without the faculties which animals possess. Every body could easily recognise the distinction between an oak and an elephant, but the distinction betwixt animals and vegetables is with greater difficulty recognised, when we discover the only trace of vitality in the former, to be a slight activity when touched in its native element; having branches like shrubs, and expanding flowers. In this case when we compare it with the numberless objects of the vegetable kingdom, there is great difficulty in saying what are the defined characteristics of this class. Linnæus gave as his definition, that minerals grow, vegetables grow and feel; and animals grow, feel, and move, an arrangement which was for some time highly popular. Boerhaave described animals as distinguished by having a stomach; but there is very little difference betwixt the stomach of an animal and roots or other organs of plants. By the first, the food is taken in and absorbed internally, whilst vegetables exist and flourish by external absorption; the organs of both are the same; and they subsist by constant absorption of extraneous and elementary matter. Many vegetables have so much an appearance of sensation, that it is impossible to say whether they are possessed of it or not, as in the *Mimosa*, nor would it be necessary, in order to possess this feeling, to say that they have no brains, as sponges and other animals are deficient of this organ. Leaving all other considerations, it is evident that vegetables are intermediate between the mineral and animal kingdoms; that they are the workshop of nature in which elementary matter is converted into food and the pabulum of life.

Setting aside form, the only other claim which Zoophytes possess to be ranked in the vegetable kingdom is, that they do not move about from place to place. This faculty is, however, wanted in several species of shell fish, and also in the animal flowers, the parts of which, look like the petals or pistils of flowers, whilst the purposes to which they are applied are very different; the only resemblance being in their similarity of form, these parts, like flowers, being not for the propagation of the animal, but obtaining food. One of the most interesting and conspicuous of these, the *Tubularia Magnifica*, grows on the rocks in the West India Islands, and specimens can only be obtained by breaking off portions of the rock on which they are situated. The body is a simple

tube, surrounded at the top with rays, and having two tentacula or arms, extending from the interior. It is conjectured that the animal possesses a sort of vibratory motion, producing a vortex or whirlpool, which draws animals upon which it preys near the mouth, where they are seized by the arms and then swallowed. The substance possesses a very close resemblance with the *Passiflora Quadrangularis*, and it is only such circumstances as the difference of texture and of situation, and the uses to which the various parts are applied, that furnish the means of accurately knowing the difference. The propagation of Zoophytes again resembles vegetables, in the propagation from pieces or slips. One of the most remarkable experiments connected with this class of animals may be seen by searching in the month of May, or in April, if the weather be warm, under the leaves of the water lily, or blades of grass growing in stagnant water, for a little gelatinous substance, of a greyish hue, resembling frog's spawn, which is a polypus. If these are placed in a tumbler of water, and carried into a warm room, they will soon be perceived to extend themselves, and then throw out their arms and feelers. Some remarkable experiments were made upon these fresh water Polypi about a century since, and published in a work by Mr. Baker, F.R.S., who devoted nearly his whole time to their examination. They are exceedingly voracious, feeding upon worms and insects inhabiting stagnant water, which they catch by their arms and then swallow; the prey being macerated and pushed to pieces by the vibratory motion of the animals. Not unfrequently two of these will seize upon one worm, which, if not broken in the contest, the smaller one along with the prey will be swallowed by the other. This, however, it cannot macerate, and it is not unfrequently ejected sound with the prey in its stomach. They may be multiplied in sections to any amount, and the parts of two may be grafted together and form one perfect animal. These circumstances have induced many to consider them as the connecting link between vegetables and animals, but however singular these powers of reproduction and union may appear, they are not so remarkable as the growth of blood vessels and muscles in the human frame. If we descend lower in the scale of creation, we shall discover instances of reproduction not less astonishing as in the horns, and even the head of the snail, and in the claws of the lobster, in order to supply the loss of this limb, they so often experience from their warlike propensities. The reproduction of matter from its own actions is no matter of surprise, nor can be considered as confined to the vegetable kingdom, when we possess the power in a much more eminent degree. The principle of life may be the same throughout, and vegetables may be but an in-

ferior order of animals. Many plants, indeed, appear to possess a higher degree of vitality than many animals, the organs of some of which are so simple that it is often impossible to determine between the Algæ and Zoophytes.

These are Professor Johnson's notions upon a subject which has engaged the attention of many great men, we do not say they are his published notions, but we have heard him deliver them at a lecture, and we think them ingenious if not conclusive.

CULTURE OF THE HEARTSEASE IN FRANCE.

WHENEVER then any fine heartsease is obtained, whether by seed or slips, great care must be taken to plant it in good ground, though, as we have already remarked, the plant is easily satisfied in this particular. It will be found to grow better, and last longer in situations half exposed to the sun, east, north-east or west, than where a full sun falls on it, as in places with a southern aspect. In this last-named situation, it succeeds well only from September to May. From June to September it dries up and perishes, when the summer is dry. The first flowering of the heartsease, with blooms constantly succeeding each other, of full size and great beauty, lasts from April to June; and it is from this flowering that the seeds should be gathered, if the florist desires to possess it in perfection. It is also in June that the operations of placing layers and preparing slips should be performed, in order to preserve the finest varieties in their purity, and to procure another blow in autumn as brilliant as the first. This last one may last from two to three months, according as the severe frosts are earlier or later in appearing; and we may remark that it is on account of these two long flowerings, that this plant has obtained that value in the eyes of amateurs, which is now universally accorded to it. If, in place of paying the attention which we have just detailed as indispensable, the plant be abandoned to itself and be merely watered to support it against violent heats, it will be seen that, although it continues to vegetate and to produce flowers indefinitely, still the flowers in July and August will diminish sensibly in size; and eventually, from September to October, in a vast number of individual instances, these flowers fall back to the small dimensions which they were of originally, before they were by the careful hand of cultivation drawn from their natural state. During this long flowering, the plants continue to a late period to give seed. We have tried experiments on that produced in 1835, and have found that it is a wrong supposition to imagine, that because the seed proceeds from the same plant, though at different times, it must therefore in all instances produce the same result; the fact is otherwise, the seed

coming from the first flowers, which are beautiful and of full size, and in fact in their full force, gives forth varieties of different sorts, also with full-sized flowers, amongst which, particularly in the *blue-cobalt*, many are a repetition of the mother plant. But the seed coming from the flowers diminished in size (that is from the August blow), gives very few plants with full-sized flowers; while the seed gathered at a still later period, in general, produces nothing which repays the trouble of sowing the seed. The amateurs of the Heartsease ought, therefore, to prepare slips or cuttings in the rainy moments at the end of June or July, and when it is dry, even make cuttings and cover them up. This they must do if they desire to preserve the several varieties, and gather the precious seed, either for their own use or that of their friends. If they fail to take this precaution, they run the risk, particularly if they give away seed of the second or third crop—they run the risk of making, contrary to their wishes, an exceedingly disappointing present.—*Translated from Annales de Jardiniers Amateurs.*

DECOMPOSITION OR PUTREFACTION OF VEGETABLES.

ALL vegetables, when the principle of life has departed from them, begin spontaneously to be decomposed (to putrefy). The elements which enter into the composition of plants when left entirely to the disposal of their chemical affinities, have a tendency to separate from each other, and form new compounds, very different from those which compose the living plant. This is termed the "spontaneous decomposition" of vegetables. The substances formed by the new arrangements of the elements of the vegetable are aerial and colourless;—hence the entire disappearance of the vegetable, as if it had been totally annihilated when life ceased to preserve its particles together in the vegetable form.

The compounds formed, when the vegetable dies and putrefaction goes on, are, carbonic acid, water, carbonic oxide, and carburetted hydrogen. The two former are the chief results of the decomposition; the two latter are formed more sparingly, and principally when there is not a free supply of oxygen to the substance undergoing decomposition. The carbon and hydrogen of the plant have a constant tendency to unite with oxygen, and form carbonic acid and water. Now there is never present in the vegetable a sufficient quantity of oxygen to convert all the carbon into carbonic acid, and all the hydrogen into water; hence, if there be not a sufficient supply of oxygen to produce these compounds presented from external sources as from the air, the two other matters are formed, one of which (carbonic oxide) requires a less quantity of carbon than the carbonic

acid, while the other (carburetted hydrogen) requires no oxygen, consisting of carbon and hydrogen.

In vegetables which decay under water, carburetted hydrogen is abundantly formed; hence arises the gas which is found so plentifully in summer in stagnant waters containing quantities of putrefying vegetables.

The spontaneous decomposition of vegetables goes on most rapidly when they are exposed to the air, kept moist, and preserved at a degree of warmth higher than the usual temperature of the atmosphere. Putrefaction is retarded or almost prevented if the vegetable be dried, so that its own moisture is expelled, carefully excluded from the air and moisture, and kept cold. The influence of heat in promoting the decay of vegetables depends upon the repulsive power it possesses, by which it disposes the various elements to assume the gaseous form. Animals and vegetables are frequently found in snow or ice, in a high state of preservation.

Such are the changes which go on in the dead plant. That mysterious agent, Life, is able, by its peculiar power, to control and overcome the chemical attractions which tend to produce these changes, and retain these elements in that state of combination best adapted for the performance of their proper functions; at the moment, however, in which life ceases to superintend the exercise of these functions, they cease, and the chemical attractions, no longer restrained by the vital principle, obtain full sway. The carbon, oxygen, and hydrogen, formally existing in the state of wood, bark, leaves, fruit, or seeds, obey the laws of chemistry, return to the state of carbonic acid, water, or inflammable gas, mix with the earth and atmosphere, afford nutriment to new plants, again form leaves, flowers, and all the beautiful and diversified organs of the vegetable creation—again wither and decay, and return to the soil to supply new generations, and continue the same series of unceasing revolutions.—*Chemistry of Nature.*

CULTIVATION OF TOBACCO.

To the gardener this herb is a requisite, "*a sine qua non*," and the greater number of persons purchase the varieties called 'shag' and 'returns'—at a considerable expense. We know by experience, that a very efficient article may be produced in the garden for a mere trifle, and be cured by the process described in the *GARDENERS' GAZETTE* of May 12th, 1838; but, simple as most gardeners would deem the culture of the large-leaved Virginian to be, we are not acquainted with any herb which is more subject to casualties, nor one which, at times, more speedily disappoints the expectations of the grower. It is not that the plant is tender, or miffy, for we have two now growing in the

garden which we potted in the last autumn into 48's—little things that could neither grow any longer, nor form blossoms in the open ground. These were retained under glass, and had no assistance from fire till the middle of January, and they lived through six or eight degrees of frost. But the great destroyer of the seedling in its first stage of existence is the woodlouse, formerly called millepedes, though erroneously. This insect abounds beyond belief in some years, and the present is one of them: we have seen it everywhere; in the fields, the gardens, in ditches, and drains, in wet places and in dry, not to say anything of forcing houses, and its usual places of resort—the bottoms of garden pots. The second enemy, and by far the most fatal, is the small slug of the garden. We remember visiting the beautiful grounds of Mr. Forster at Clewer, in 1836, where the finest plants of the new white flowered variety had been produced the year before, in the greatest perfection; but, though the weather was extremely dry, the gardener had then great difficulty to preserve his plants from destruction however large they might be. The critical period is that wherein the plant is apparently torpid after removal from the pot to the open ground: then the juices of the leaves become thickened, and perhaps sweet; and as the vital energy of the foliage is exerted to establish new roots in a soil which differs more or less from that within the pot, every injury sustained by it becomes of serious consequence to the establishment of those roots. Thus the wounds inflicted by the slug (whose rapacity is tempted by the condition of the inspissated sap) become rapidly fatal: and weeks of watchful nursing may have been spent in vain, at a period of the year when it is too late to think of raising other seedlings.

We saved thirty or forty plants in 1836, and these supplied us sufficiently; but we were beaten in 1837, and were unable to bring more than five to perfection.

Experience then has shown, that if plants are to be raised and brought to flower in one season, the seed should be sown (if woodlice abound) in pans of light sandy soil, supported over a trough, or other vessel, containing water: through this the insects cannot pass. When the plants become large enough, one or two must be transplanted into a 'sixty' of rich sandy earth; and kept shaded, in heat, till the roots play about the pot. If the plants attain the height of five or six inches, either in these small pots, or in others a size larger, so much the safer will they be. A better plan—though we have not tried it—would appear to be, to form a small hotbed of dung or leaves of moderate heat, to plunge small sixties in a bed of earth over the dung, and to sow the seeds in the pots: finally, to thin out all but one seedling, which might be turned with its ball into a large sixty, wherein it would be nursed till it attained height, strength, and three

or four good leaves; and finally be hardened off in a cool frame prior to its removal to the open ground, about the first week of June. The latter end of March is time enough for the sowing; but the plants should never be suffered to flag.

When in the ground, each must be covered with a small pot, or hand-glass, round which, powdered lime with one-fourth of soot, should be sprinkled: if slugs infest the mould within the cover, a little dry lime, without soot, must be scattered over the plant and the earth. Shade for a time is essential, and therefore the pots or glass must be retained till the objects of protection and shelter be effected, and growth be evidently established.

Sometimes a strong, early flowering plant, will shed ripe seed on the surface, and from these good seedlings will rise in the following spring: whenever this occurs, it is a fortunate circumstance. Another plan might be tried: and that is to sow in August or September, under glass, to nurse the seedlings as before recommended, and to preserve pots of the best plants under gentle temperature throughout the winter. In the garden, the most *open* situation and exposure, remote from fences or hedges, should be adopted, and we have proved that manure trenches promote the growth of the plants very materially.

WEEKLY JOURNAL OF GARDENING.

CUTTINGS of GERANIUMS may be now placed under hand-glasses with a little bottom heat.

SEEDLINGS of all STOVE and GREENHOUSE PLANTS may be pricked out into small pots as fast as they come up.

INARCHING and **BUDDING** may go on with any class of plants propagated in these ways.

GREENHOUSE PLANTS generally may be propagated by cuttings.

CARNATIONS and **PICCOCKES**, where the layers are long enough, may be laid while in bloom, especially if there be a great number to manage; but, generally speaking, the prime part of the bloom may be over before it is actually required to be done.

Bud STONE FRUIT TREES on plum stocks.

Continue to watch all plants grafted or worked on stocks, and free them from side shoots, suckers, &c.

Propagate **HARDY SHRUBS** by layers.

CABBAGES, **BROCCOLI**, **SAVOYS**, &c., may be planted; let the ground be dug, and the plants be put in immediately; if the ground be so situate as to be too dry for this operation, time will be saved by waiting for rain.

BROCCOLI seed for late crops should be sown.

THE COCKCHAFER GRUB IN FRANCE.

THE only remedy that can be applied successfully to rid us of this pest, if executed on a large scale, and by the co-operation of all those interested in the matter, is the destruction of the Cockchafer.

This has been done here in some districts with success; in small towns, the mayors have paid a certain price for every bushel of Cockchafers; in the King's gardens, at Neuilly, immense numbers are destroyed yearly; but as all the landowners are not compelled by law to join in the chase great good cannot be expected.

The ravages of this terrible insect are enormous in France, particularly in our rose nurseries in the country. I have seen a poplar of more than ten inches diameter destroyed by it.

In small gardens our rose and dahlia amateurs plant four or five lettuces early in May round each plant; as the grub is very fond of the lettuce root, it leaves the roses or dahlia untouched, and as soon as it has attacked the lettuce it fades, which is then immediately dug up with the spade, the grub is found at the root, and destroyed, and another lettuce planted at the same place.

Some have borders of strawberries instead of box, they also attract the grub, and soon fade, when touched by it.

But these means cannot be used in large gardens, and many people object to them, as so many lettuces render a garden unsightly.

At the palace of Versailles, in the kitchen gardens, which are very extensive, scarcely a strawberry can be grown, all the plants are destroyed by the grub of the Cockchafer, as Mr. Paul of Chesbunt has been able to ascertain, when visiting that place with me in the spring of last year.

We have lately been told at a meeting of our horticultural society, that a gardener in the country had found the means of protecting his beds of strawberries against this destructive insect: by digging his beds one foot and a half to two feet deep, and putting at the bottom a floor of leaves, putting the earth in again, it appears that the grub cannot work its passage through the leaves; it goes, of course, in the neighbouring beds, but the strawberries are protected.—
Extract of a Letter from Mr. John Risley.

APPLES PRESERVED IN SAND A FALLACY.

It is surprising with what facility persons imagine they have discovered something new and useful, and hasten to make it public; equally surprising it surely is, that, so frequently as the public has been disappointed in the promised results, that every fresh assertion is implicitly believed and adopted. The inventor of the method of preserving apples in sand, we will hope, for his own credit, thought

that he believed in its superiority; yet he could not have tried it fairly, or he would have stated its disadvantages as well as its good qualities. We are of the gulled public; and having gained our experience, hasten to put our fellow experimentors in possession of it.

We followed our instructions, and dried our sand, which, be it known, is a most annoying process; for, although it had been exposed to the influence, under cover, of the summer's sun, it absorbed water so readily, that after it was dried in a brick oven, it became quite damp and unusable in two or three hours. Again, therefore, it was exposed to heat, and the fruit deposited as directed, as soon as it became cold.

Last week we made trial of the apples, and found the flavour to be execrable, and the grit so insinuating, that wiping with the utmost care, was ineffectual; and, not only wiping, but brushing the eye and the stalk, for a much longer time than any apple is worth, would not remove the grit; sand was in our mouths when we ate them raw, and in our dishes, when made into tarts. Yet, even this is not so great an objection as the exceedingly disagreeable flavour which is contracted by the fruit thus preserved. Disadvantages must necessarily attend every method of keeping apples. If they are placed separately on shelves in an open fruit room, the skin shrivels, and much of the fine flavour escapes; if they are packed in casks, baskets, or boxes, they are liable to decay, and infect one another, so, that the trouble of looking over them is endless; if they are buried in the ground, in the same manner that potatoes are pitted, they become entirely spoilt in a few weeks; and our winters are too changeable and mild for the American method to be tried, with any prospect of success—we mean that of packing them in casks, and covering them with linen (not woollen) cloth: with this slight protection, we have been assured that they do not freeze. Yet another plan remains, that of placing them in some dark room, exposed to the atmospheric changes, where, if they are frozen, they will remain uninjured, provided they are allowed to become thawed unexposed to the light. This is a fallacy. We have tried every plan, and can give no preference to any one; yet most assuredly can aver, that next to the pitting method (and *this* we have actually seen in print, and recommended!) the sand system is the most objectionable.

GLEANINGS AND MEMORANDUMS.

HOW TO PRESERVE POTATOES.—Perhaps the following hints may be of some little service to those who have not the convenience of a dry cellar. When the potatoes are ridged up ready for covering, let a little straw or dry fern be spread over them, after which let a foot thick of

earth be added, chopped, or otherwise rendered as fine as coal ashes; let neither a foot tread it, nor a spade beat it, but leave the whole as light as the soil will admit of; but where the soil is naturally stiff a greater thickness of it must be added, and the sides of the ridges to be left as steep as possible, and the lighter the soil is put on, the more frost will it keep out. The reason is obvious enough, for when light soil is laid on steep ridges rain never enters deeper, perhaps, than two or three inches, it being held in a kind of solution with the fine earth by capillary attraction; or, in other words, the air in the light soil keeps the rain from sinking, consequently it runs down the sides of the ridges, and keeps the interior of the mass as dry as possible, and, of course, the frost never enters to any very great depth. When the soil is trodden, or otherwise made firm, the air beats out of it, every drop of rain enters, and sinks through the whole mass, then master frost takes liberty to follow, vowing vengeance to Mr. Murphy.

COCOA-NUT TREES.—The cocoa-nut tree contains in itself nearly all the important properties which are found at large in that valuable family of plants, the palms. Johnston, speaking of the abundance of the cocoa-nut tree in India, where he says it occurs to a greater extent than the olive in Spain, or the willow in Holland, affirms that there is no part of the tree which cannot be applied to some useful purpose. Captain Seely, in his account of Ellora, says that, "when he was stationed at Goa, in 1809, he lived as many others did, in a cocoa-nut leaf house; and that although the period was at the very height of the monsoon, and the house was on the sea-coast, it was comfortable and warm. He believes that not a nail was used in the whole building. The rafters, supporters, &c., were fastened on with string made of the fibrous envelope of the cocoa-nut shell; the wood was the tree itself; the roof, walls, doors, and windows, were the leaf." From the same authority we learn that the fibres enveloping the shell of the nut may be woven into a cable, by which ships of seventy-four guns have safely rode out gales of wind when European cables were parted. The tree bears fruit twice or thrice in the year, and the nut when half ripe contains sometimes three or four pints of clear fragrant fluid; and the nut itself, from its highly nutritious qualities, is used as an aliment in all inter-tropical countries. In the Warnerian Memoirs, vol. v., is a very interesting account of the cocoa-nut tree; and it is there stated, that in 1813 the number of cocoa trees cultivated at Ceylon, along a line of coast of about 184 miles, was 10,000,000, and that that number was increased in following years; that elephants are fed on the leaves, and that the ashes of the tree contain so great a proportion of potash, that the native washerwomen of Ceylon use them instead of soap. Besides the variety of cups and other articles formed

from the shell, *palm wine* is obtained from the liquor, which flows from cutting the extremity of the sheath whence the flowers arise. This liquor, also, if concentrated by boiling, produces sugar, so that vinegar also may be formed from it; and the oil obtained from the nut is used almost exclusively in India, and is not inferior to sweet almond oil.

CULTIVATION OF SEA KALE.—This being a vegetable of general cultivation, various methods of forcing it have been recommended and practised, with a view to obtain it in the greatest perfection. Where it is not wanted for use before the middle of February, or beginning of March, the simplest and perhaps the best and most economical method, is by covering it with leaves. The leaves should be collected together on a dry day, as soon as they have dropped off in sufficient quantities, which is generally about the beginning of November. The Sea Kale being planted in rows in one of the quarters of the garden (so as to admit of a square at least twenty feet each way being covered at once), the leaves being trimmed off, and the surface of the bed loosened with a fork, the leaves must be laid from two and a half to three feet thick all over the the bed, by which means the usual method of covering the plants with pots will be rendered unnecessary. The bed will require no further care until the Kale is fit to cut. The proper time for cutting will be seen by each plant, as it gets ready, pushing up the leaves over-head, like large mole-hills, thus indicating the exact part of the bed where they are ready for use, and consequently saving the trouble of seeking with uncertainty for the most forward plants, as is the case when covered with pots and forced with dung. When forced in this way, the leaves come up perfectly erect, and in one compact stick, often two inches in diameter, perfectly clean and well blanched; while those forced with dung (particularly when the heat has been rather strong) come up slender, with the leaves spreading, so as to be obliged to be taken off singly before they can be dressed for table. Portions of the quarter may be covered at later periods, to keep up a succession until the beginning of May, when it is succeeded by Asparagus, which then comes into season. If Sea Kale is wanted earlier than the middle of February, it must be forced with dung in the open quarters, or taken up and forced in hotbed frames, cellars, the mushroom-house, or other convenient place, where it may be got of inferior quality by Christmas; but such early forcing tends very materially to weaken the plants.

GUARDS FOR YOUNG TREES.—A writer in one of the periodicals recommends guards made of strips of wood lashed round the tree, with a cord or wire running through holes within a foot of each end, and kept apart by small blocks of wood, with holes through them. The objection to this mode is striking. Guards are of

no use except to preserve them from animals or wind: now, by the proposed mode, the tree may be pressed backward and forward by the ordinary rubbing of cattle, the same as if no guard were there; and it is clear also that there is no protection against high wind.

THE TULIP.—It is an extraordinary fact, that we never hear of seed being perfected in the old variety called Washington. Appearances often indicate success, and the seed-vessel swells to a third of what would be called its proper size when ripe; but invariably the vessel damps off, and in no single instance have we ever heard of a seed being saved. Thus this particular variety presents all the appearance of some hybrid plants which never perfect their seed, but which character is by no means general, inasmuch as many other hybrids perfect seed in abundance: the hybrid *Rhododendrons* and *Azalias*, for instance, seed as freely as the distinct species, yet they possess unquestionable evidence in themselves of participation in the character of both species. White *Ponticas* and crimson *Arborea* mix in all their characteristics, as will also all the other varieties.

VERVAIN.—The ancients not only considered the animal creation as constantly under planetary influence, but all vegetable productions and medicinal substances as subject to its laws. The Druids of Gaul and Britain gathered the famed *Misseltoe* when the moon was six days old. The *Vervain*, held in such high repute by the Romans, was gathered, after libations of honey and wine, at the rising of the dog-star, and with the left hand, and, thus collected, served for various sacerdotal and medicinal purposes; its branches were employed to sweep the temples of Jupiter; it was used in exorcisms for sprinkling lustral water; and, moreover, cured fevers, the bite of venomous animals, and appeased discord; hence it was borne by those heralds who were sent to sue for peace, called *Verbenarii*; and when its benign powers were shed over the festive board, mirth and good temper were sure to prevail. It is, however, somewhat doubtful whether the *Vervain* of the ancients was similar to the plant that now bears that name. It would appear that formerly the appellation of *verbenæ* or *sagmina* was given to various plants employed in religious ceremonies; and branches of pine-tree, of laurel, and of myrtle were sometimes thus denominated. And the epithets of *pingues* and *thura*, applied to it by Virgil in his *Eclogues*, cannot apply to our *Vervain*, but to some resinous production.

MULBERRY TREES.—It is a remarkable fact, that no other insect whatever but the silk-worm feeds upon the mulberry-tree. Various caterpillars have been put on the leaves, but they have always been found to reject them. Even the *aphides*, some species of which are found upon every other plant, have never been discovered upon this tree.

FARINA OF FLOWERS.—The grains of the farina or dust of the American cowslip, when inspected with the assistance of a compound microscope, will be found particularly beautiful. They are distinctly organised minute pearls, and so small, that one square inch will contain upwards of three millions; and as squares cannot be covered by circles, more than one-fifth of the space will be left unoccupied. To be more particular in numbers, presuming that a square inch will contain 3,000,000 of circles in direct rows each way, the area of each circle will be the 3,819,709th part of the area of an inch.

HARES.—It is a singular fact, that this animal, so universally distributed through nature, was until lately unknown in Ireland, where it has been introduced in several places by common ones being turned loose for the use of the sportsman. This circumstance is worthy of record, as, when they become common, the naturalists of a few years hence may consider them as amongst the indigenous varieties of animals belonging to that country.

SINGULAR SECRETIONS OF PLANTS.—In the case of that curious genus of plants, the *Sarracenia*, in which the *S. adjuncta* is most conspicuous, there is a kind of pouch formed by the foliages, acting the part of a mere reservoir or cistern, to retain the falling dew or rain. In the *nepenthes distillatoria*, or the pitcher plant, the case is different, and analysis proves this to be an evident secretion from the plant itself, independent altogether of the fact that it is found in the pitcher before the lid is opened. The *cornus mascula* is very remarkable for the amount of fluid matter which evolves from its leaves, and the willow and poplar, particularly when grouped together, exhibited the phenomenon in the form of a gentle shower. Prince Maximilian, in his travels in the Brazils, informs us that the natives in these districts are well acquainted with the peculiar property of those hollow leaves that act as recipients of the condensed vapours of the atmosphere, and doubtless these are sources where many tropical animals, as well as the wandering savage, slake their thirst "in a weary land." The *tillandria* exhibits a watery feature of a very different complexion, as here the entire interior is charged with such a supply of liquid, that when cut it affords a copious and refreshing beverage to man. That these extraordinary sources of "living springs of water" are not unknown to the inferior creation, is a fact interestingly confirmed to us in some of the happy incidents detailed by Mr. Campbell in his *Travels in South Africa*, where a species of mouse is described as storing up supplies of berries of particular plants, which contain considerable quantities of water; and in Ceylon, apes and monkeys are said to be well acquainted with the *nepenthes distillatoria*, and to have frequent recourse to its pitcher.

LONGEVITY OF TREES.—Evelyn describes a yew-tree, in the church-yard of Brabourne, in Kent, which he measured in 1660, when it was superannuated, the circumference of which at the base was all but sixty feet, giving a diameter of not less than 2880 years, "and if it still exists," says Decandolle, "we may set it down as being of the age of 3,000 years." Nothing is now, however, known of it, but in its place there is one not above four or five yards in circumference at the very base; no tradition exists concerning the former, nor does any vestige remain. As the nearest approximation to it that Kent affords, two are to be met with in the church-yards of Statesfield and Easing, near Charing, which measure nine yards in circuit, at the height of four feet from the base—the former hollow, the latter sound; giving, at the rate of one line of diameter per annum, an age of 1,296 years.

THATCHING.—The following observations are well worthy the attention of those who are building or re-thatching cottages. Neat and durable thatching cannot be performed unless the straw is prepared in some such manner as here recommended, and it is highly desirable for beauty and security that the job should be well done. The Somersetshire mode of thatching is preferable to all others. It consists in using unbruised straw, provincially called reed, instead of bruised straw with the ears on it. The practice of Devon, Dorset, and Somerset, in this respect, is an example to all England, which we are surprised has not been more generally followed; it lasts nearly as long again as common straw, and does not offer the temptation arising from the grains of imperfectly thrashed corn, which induces mice and birds to infest the dwelling, and to make holes in the thatch. The mode of preparing the straw is simply to take a sheaf of wheat, and to place it in a reed press, made of two pieces of timber, ten feet long, and put on a stool, and having women to lay hold of the ears of corn, who draw out the straw, and cut off the caps, and then bind up the sheaf for use. In this process women are usefully employed in wet weather, and the corn is much more easily thrashed when in short ears than when encumbered with the straw. The thatching work done with the reed will last ten years longer than when done with the common straw, and, as to the appearance, there is no comparison; one is an elegant neat covering, and the other a slovenly ragged one. Many gentlemen possessing fancy cottages and rural habitations have been so struck with the picturesque appearance of the cottages in the three western counties, as to have sent for persons to procure reed for them in the counties where their dwellings are situated.

DESTROYING WOODLICE AND KERMES IN CONSERVATORIES.—It has been long known that various birds continually wage war on insects. The sparrow race are the greatest de-

stroyers of them, and many draw their names from the modes in which they pursue the insects which most contribute to their existence. Amongst these birds we find the tit-mouse, or tom-tit (*parus Lin.*) of which there are three kinds in the neighbourhood of Paris. They may be seen at all times fluttering about in search of their prey. Two of these are too heavy to be admitted into a conservatory, but the third, the blue tit-mouse (*parus ceruleus Eul.*) is small, and cannot do any damage to the plants. It is a pretty little bird, olive on the back, and yellowish on the breast, with the top of the head a clear blue. It is easily tamed, lives contentedly in a cage, and feeds on crushed hemp-seed, for its bill is not sufficiently strong to break the grains. Many persons complain of this bird surviving but a short time in the cage, but the death is occasioned in every instance by want of attention in bruising the food. When woodlice or kermes are seen in a conservatory, all that is necessary is to shut it closely up, and let loose one or two of these little birds. In a few days not a single insect will be left. The birds, from time to time, enter their cage, and it can easily be contrived to shut them by means of a long string attached to the little door. It was by chance that this easy mode of keeping a conservatory free of insects was discovered by M. Poiteau, the French horticulturist.

MODE OF GETTING RID OF SNAILS.—These creatures are passionately fond of bran, or the outward skin of wheat.—When this food is placed out for them, they leave it as seldom as possible, and when they do retire for a time, they return most eagerly again to feed on it. This suggests a mode of freeing any piece of ground of the insect. You have only to place over little heaps of bran pieces of broken pipes or pots, or vessels of any kind, which may shelter the food from the rain, and your work is done. The snails will congregate below, and you can in a short time destroy vast multitudes of them.—*Annales des Jardiniers Amateurs.*

THE SUNFLOWER.—The value of this plant, which is easily cultivated, and ornamental to the garden, is scarcely known in most parts of the kingdom. The seed forms a most excellent and convenient food for poultry, and it is only necessary to cut off the heads of the plant when ripe, tie them in bunches, and hang them up in a dry situation, to be used as wanted. They not only fatten every kind of poultry, but greatly increase the quantity of eggs they lay. When cultivated to a considerable extent, they are capital food for sheep and pigs, and for pheasants. The leaves when dried form a good powder for cattle; the dry stalks burn well, and form an abundance of alkali; and when in bloom the flower is most attractive to bees.

LUCERNE.—I shall say a few words on a plant which might, I think, be almost invariably substituted for broad clover, with the best conse-

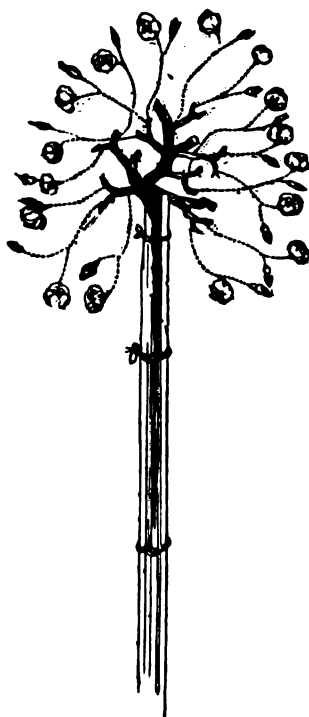
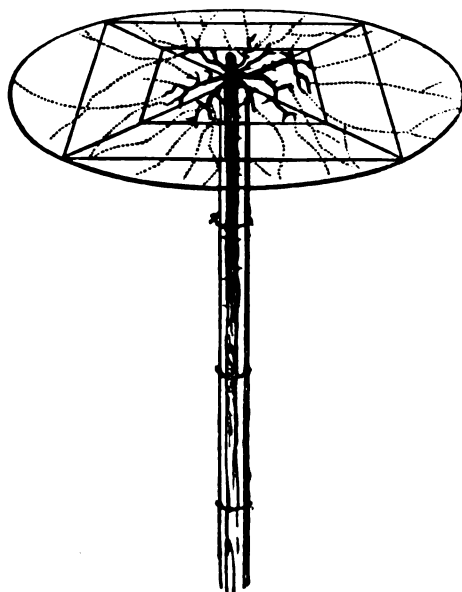
quences. *Lucerne* is that plant, and without any exception or competitor—unless it be *Saintfoin*, in some situations—it is the most productive, most remunerative vegetable of the dairy farm. Time and space are not now sufficient to enter upon the subject of its culture, but a few plain facts may be stated. It is one of the leguminous or pulse tribe, abounding in succulent herbage, which grows in favourable land to the height of two feet or more. If left to complete its growth it produces lateral, axillary spikes of bluish purple flowers, and then the stem becomes fibrous, and loses its succulence; therefore it is desirable to cut the plant over in the height of its verdure; and this mowing may be done four, five, or six times in favourable seasons, between mid-April and November. I have proved the plant for several years, and hope speedily to describe its culture from the sowing of the seed. On one occasion a small breadth of lucerne, in its second year, was cut, constantly in succession, six, if not seven times; and the winter proving mild, though it ceased to grow, it remained green throughout that season; the roots penetrate deep into the earth, hence the plant is of the utmost consequence in all those situations where chalk rock forms the substratum. The roots are tough and wiry, like those of the liquorice, laburnum, acacia, and other peablossomed herbs and trees. They cannot be raised or cut without difficulty, and therefore the plant derives its nourishment from a great extent of ground, and is in proportion tenacious of life.

WHAT IS MANURE?—A manure may be defined to be “any substance added to a soil, of which that soil is naturally deficient.” An inattention to such a doctrine has been the source of many erroneous conclusions, and much waste of money; since, to add, for instance, gypsum or chalk to soils which naturally contain them, is as absurd as to add sand to a sandy soil, or clay to a clay. Thus, many farmers finding the chalk produced very good results upon their lands, have taken an early opportunity of repeating the dressing, and have been surprised to find the effect very trifling compared with the first application—but this was no matter for astonishment, since the land being already furnished with a sufficient supply of chalk, needed not any further addition. The case is essentially different with animal and vegetable manure, which are speedily dissipated and lost to the soil by the progress of putrefaction. You rarely hear the cultivator complain of an excess of these in his lands. It is, therefore, of the first importance that a farmer should obtain a correct knowledge of the principles on which all manures operate—that they are beneficial principally by entering into the composition of the plant, and that when they cease to be needed as the food of plants, they cease to be manures. Thus gypsum is an excellent manure on soils which do not already

contain it, for red clover, lucern, and saintfoin, but on no description of land is it a fertilizer for wheat or any other commonly cultivated crop;—this fact long puzzled the Norfolk farmers, until they discovered, on examination, that gypsum (sulphate of lime) is found in very sensible quantities, in red clover, saintfoin, and lucern, but is totally absent from their other crops; and that, thus while it was a direct food for the first, it was utterly useless to other plants.—*From a Letter by Cuthbert W. Johnson, Esq.*

THE RED SPIDER.—We know sulphur will kill this pest, but it is difficult to apply. The “flowers,” or the finely lavigated *stone brimstone*, are with great difficulty mixed with water; and yet it is highly desirable to throw a shower of sulphured water over the entire foliage of a vine or peach tree. This object can be readily effected by the aid of a little gum tragacanth (gum dragon, as it is vulgarly called). Half an ounce of the powdered gum, which can be procured very cheaply of any druggist, may perhaps suffice for three years. To a table spoon full or two of flowers of sulphur, in a Wedgwood mortar, add three or four grains (or a quantity that would scarcely cover one half of a fourpenny piece), of the tragacanth; rub them together, dropping in a very little water; work these materials with the pestle till an even, pasty mass be produced; then add water to bring the sulphur to the consistency of cream; and in this state it will unite with any quantity of water; or, in other words, the particles of the sulphur will become diffused throughout the whole bulk, and can then be taken up by the syringe. The sulphur, it is true, will be deposited in time, but agitation will bring it again to that state of diffusion in which the particles may be thrown on the plant; to which also they remain *fixed*, in situations wherein they may exert their utmost energy, whether that be preventive or remedial. T.

FLINT IN VEGETABLES.—It is curious, and hitherto inexplicable, that flint, which is one of the most intractable of all substances with which the chemist has to deal, makes its way by some means or another into the substance of the tenderest plants, and it becomes visible and tangible upon the surface of some plants. Two pieces of common cane when struck together will produce flashes of fire like two flints. The reason is, there is abundance of flint upon the surface of cane. Many beautiful specimens of fossil wood are brought from abroad, where the whole substance of the wood has been replaced by flint, leaving the form just what it was, so that the granulation, the knots, the fibres, are all the same in appearance as they were in the tree; but the whole is no longer wood but flint, capable of the highest polish.



PRUNING OF ROSES.

It is a curious circumstance, that whoever happens to grow Roses, and is not fully acquainted with the operation of pruning, is sure to object to the destruction of so much of the tree as is necessarily removed in the operation when well performed. In our younger days, when standard Roses were rather more of a novelty than they are just now, we vainly endeavoured to persuade a lady to let the heads, which had grown large in one season, be cut in properly. With no small difficulty, however, we obtained leave to trim, as she called it, the last two in the sides of a long walk, which had standard Roses all the way down, nearly a hundred yards.

We cut close, for they were free growers. We left two eyes in each piece of wood that we left at all, and the next season the lady was a convert. The principal object of this short paper is to show the propriety of cutting Roses in very short, and the sketches are intended to exhibit the tree cut close, and by the dotted lines to show what would in very ordinary ground indeed, be the growth of the new wood from each bud. The one is trained on a flat trellis, the other is at liberty; but there is sufficient instruction in the sketches alone to enable a novice to prune a Rose; even had he never read or heard a word upon the subject.

WEEKLY JOURNAL OF GARDENING.

STIR the surface of all POTTED PLANTS not lately shifted: give a little fresh compost.

The greatest care must be taken to water the POTTED PLANTS out of doors as well as in rooms, especially those in small pots in the open air, for they dry up and suffer dreadfully, often fatally, from a very few hours' neglect.

HEDGES should be clipped; BOX-EDGINGS should be cut and dressed.

Look over VINES, and take away all useless shoots.

Go over all WALL-FRUIT TREES, and remove useless branches; nail up neatly all that should be trained.

In the KITCHEN GARDEN the removal of

spent crops, Beans, Peas, &c., should be attended to, and dig and dress the ground for other subjects.

Plant CUTTINGS OF POT-HERBS of every description, Sage, Savoury, &c.

Water the CUCUMBER PLANTS on ridges, or planted out for picklers; give air to those in frames.

In the FLOWER GARDEN the principal operations are, tying up straggling flowers, removing the stumps of those out of bloom, weeding, watering, &c.; attending the opening blooms of Piccotees and Carnations, layering the side shoots, &c.

July 29, 1843.

THE ONION.

THERE are many varieties of this useful vegetable, of which no less than fourteen are familiar, viz.: 1. Silver Skinned; 2. Early Silver Skinned; 3. True Portugal; 4. Spanish; 5. Strasberg; 6. Deptford; 7. Globe; 8. James Keeping; 9. Pale Red; 10. Yellow; 11. Blood Red; 12. Tripoli; 13. Two-Bladed; 14. Lisbon. These names are all found in the catalogues of the Horticultural Society; but, independently of these, there are many species, such as the Garlick, the Eshalotte, the Welch Onion, the Leek, Chives, the Tree Onion, and Spanish Garlick. The object, however, of the present notice is the common Onion and its varieties. These will always succeed under the same treatment, the only difference being in the season. They are sown out of doors, thinned when they come up, constantly weeded, allowed to swell, ripen, and be gathered in. The Onion requires a good air, rich soil, and plenty of room, and is one of the most useful crops for a family. The first sowing should be in February; the main crop to depend on for quantity sow in March. Previous to sowing, give the ground a good dressing of rotten dung, it can hardly be too strong, dig this in, and well mix it, one good foot deep; then break the lumps and make the surface level. Then sow the seeds thinly all over the space, at the rate of about one ounce of seed to a rod of ground, which is a square piece of 16½ feet each way. When this is sown, tread or roll it all over, and then gently rake it to cover the seed properly. In six or eight weeks they will be large enough to enable you to thin them out where they are too thick, and, at the same time, to take away all the weeds—and take care to do this in dry weather.

It is a common practice to sow Lettuce or Radish, or some other crop along with Onions. There is no excuse for this if you have any ground to spare, for though both may come somehow, both crops are damaged. If the first weeding and thinning be properly done in dry weather, the crop will want little else for six weeks longer, when, however, they may be hoed over again, and left about four inches apart; and, if there be any vacancies, some should be carefully raised, with all their root, from where they are too thick, and planted in such vacancies to make them good. This should be done in the evening, and the whole be well watered, and the evening waterings repeated until the removed ones are well established. Care must be taken in transplanting Onions, to insert only the fibrous, root into the ground, as the bulb grows properly on the surface. In another month they must be gone over again, and, as they will be large enough to draw, they may be once more thinned, by pulling out where they are too thick; or if the piece of Onions be only large enough

for a small family, they may be pulled out continuously to use from day to day; they must be also kept perfectly clear of weeds, for on this depends much of their growth. About the middle of July, before the tips of the leaves begin to turn brown, the leaves should all be bent down, within an inch and a half or two inches of the bulb. It not only prevents the Onion from being stiff-necked and running to foliage, but it causes the bulb to swell much more than it otherwise would. By the end of August they will, most of them, have arrived at their full growth, and the foliage will begin to wither, the necks will begin to shrivel, and they may be easily pulled up. They must be then gone over, and such as are ready must be lifted, and as soon as dry, stored; the others which are not so ripe must be waited for. They are best and easiest dried on mats spread in the sun, and when the leaves are thoroughly dried, and the bulbs are hard and firm, they may be cleaned of their mould and stored. They should be laid only one thick all over the shelves or floors, and frequently looked over; those which first indicate softness or sprouting should be first used. It is not uncommon to burn the roots and tops of some, for very late use, with a hot iron, but we can hardly think it useful.

There is a plan practised by some, who take pains, to bring very large Onions, which originated in America, but which has met with encouragement here. It is to sow in May, and the Onions will not be larger than good picklers in October, when they are ripe. These are carefully dried and stored, and in March they are planted out, six inches apart, in very rich mould. These will swell and make enormous bulbs. If, however, they are sown too early they run to seed instead of swelling. It is said that in Portugal, they sow on heat, in November or December, and plant out as soon as they are as large as swan's quills. Another plan, as practised in some parts of Essex, is to sow in August, to stand the winter, and plant them out in rows, six inches apart, to be kept weeded and watered when necessary. To save seed, it is requisite to find the largest and most handsome bulbs, and plant them in March. They should be planted in rows, ten or twelve inches apart; they should not be sunk more than one half in the soil. As they send up their seed stems they should be supported. Of course, the cleansing from weeds is a necessary process. When the heads of seed ripen in August, they must be taken off and be allowed to dry on cloths in the sun; they will then be ready to rub out, in a few days, when the seed must be cleaned and laid by. It is only to be depended on one year; although it will occasionally vegetate after being kept a longer period.

THE FUCHSIA SAINT CLARE.

WE feel somewhat perplexed at a very extensive correspondence which arises out of the sale of a Fuchsia, called *St. Clare*, let out by Messrs. Youell, of Great Yarmouth, and said to be good for nothing. To insert these letters would be impossible, on account of our limited space; besides, many of them are libellous and offensive, both to Mr. Youell and the editor of the *Chronicle*, upon whose doubly favourable report the plant was extensively purchased, and the buyers beyond measure disappointed. It is a painful thing to reflect upon the fact, that floriculture is almost the only science in which the followers are subject to such fearful inroads upon their pockets, and such disheartening annoyances in their progress. It is almost impossible to conceive how persons once taken in can become so soon again the dupes of misrepresentation. Yet, instead of illustrating the adage, "a burned child dreads the fire," they seem to become, up to a certain point, at least, more ardent in the pursuit of novelty in proportion to the disappointments they encounter; nevertheless, that certain point is at last reached, and the most ardent florists become disgusted with a pursuit which subjects them to such continued loss and vexation, and they despairingly abandon it altogether. From the correspondence we have alluded to, we learn that a Fuchsia called *St. Clare* was sent to Dr. Lindley for his opinion, and he made such a favourable report, that Messrs. Youell sold very many to persons who paid deference to such authority, that instead of its proving to be what it was reported to be, it has disappointed almost every body, that the warmest friends of Dr. Lindley, not venturing to defend *his opinion*, only attempt to defend his honesty, averring that Dr. Lindley *does not profess to know any thing about flowers*, except botanically, and that he spoke as he thought. With all submission to Dr. Lindley's friends, this is a lame excuse. We do not pretend (though some of the letters say) that he *wilfully* misrepresented the plant, but that *he did misrepresent it*, some scores of buyers can testify to their cost, and we deny the right of a public journalist to plead ignorance on any subject that he has given an opinion upon, because he has no right to give one unless competent. Is it not a fearful thing to contemplate that a rational and delightful pursuit like floriculture should subject its votaries to such impositions? Yet, if they who follow it will take the opinion of a person incompetent to give a proper one, they must abide the consequence. Some of our letters threaten legal proceedings against both the newspaper and the seller for conspiracy! This is idle menace. The best thing they can do is to put up with the loss, and not act upon such authority in future. The Floricultural Society committed itself quite as deeply on three

occasions out of every four, and the only person we could ever hear of acting in the capacity of judge there (and the *Gardeners' Gazette* says he filled all the offices of committee president, secretary, and judge also) is now Dr. Lindley's assistant in the *Chronicle*. We have, we think, the very best means of knowing the qualities of the two gentlemen thus associated, having been acquainted with one of them from the time his father was a nurseryman, and from having repeatedly mixed with both, and we do not hesitate to say that scarcely two persons could be found so utterly incompetent to decide on the merits of plants and flowers (always excepting Dr. Lindley's botanical knowledge, which is of no use in estimating their properties); indeed, Dr. Lindley has repeatedly in our presence ridiculed florists' flowers and hybrids, and confessed *he knew nothing of them*, and could see *no beauty in them*; and his associate (we say it not with any personal feeling, for that would bid us to speak favourably instead of disparagingly) has no pretensions as a judge. We have heard his opinions, and seen him among flowers many a time, and there has been no more symptoms of an acquaintance with their properties than would be found among persons who had never seen a garden. The remarkable difference between him and the Professor is this—Dr. Lindley *boldly admits he knows nothing about them*, and Mr. Wildman, who knows still less of flowers, because he is not even a botanist, fancies he knows every thing; still, Mr. Wildman is a very good, though in floriculture, vain man, and is not half so much to be blamed as those who are content with his decisions. Here is a fact which no sophistry can remove or palliate. A distant nurseryman submits a plant for the opinion of a professor who conducts a paper. Upon that opinion he acts—upon that opinion every body purchases—and as soon as the plant shows itself it is found every body is deceived. The professor's friends throw the blame on Mr. Wildman, whose opinion, however wrong, may be quite as honest as the Professor's, and the people who have been deceived fly off to other publications to complain. Why not write to the people who deceived them? Why not address their letters to the *Chronicle*? We see no excuse for the dupes themselves, who have been, and in all probability will continue to be, the most earnest supporters of the paper which deceived them, and the first to fall into the trap next prepared for them with the same bait. We are, however, somewhat concerned for those enthusiastic amateurs, who can but ill spare the money for a good plant, and who forego some other enjoyment to possess it. It is a hard case when people of this description are taken in, and there are too many of them who have suffered by this transaction of the Fuchsia *St. Clare*. We acquit every body of intentional mischief, but the editor of the *Chronicle* cannot

be acquitted of culpable negligence. He has no right to trifle with the influence which the management of a public journal gives him. It is not, by all accounts, the first time he has by similar means misled the public. Florists have purchased pinks, and pansies, and dahlias, upon the same authority—the praises of the *Gardeners' Chronicle*—and been disappointed by the same results, the worthlessness of the subject purchased. Week after week have subjects been presented to us for our opinion, at the same time that they have presented for Dr. Lindley's, and week after week have we written private letters condemning the very flowers that have been praised in the *Chronicle*. We hope and trust that those who have meant to profit by opinions will recollect, that however gratifying praise may be, it is injurious to the character of every nurseryman who acts upon it when fallacious; and we candidly tell the public, that every one who purchases upon the recommendation of the *Chronicle*, will run no small risk of being deceived.

HINTS TO YOUNG FLORISTS.

On the 1st of August.

No time should be lost in layering Carnations and Piccotees, or rather in completing it, for they ought to have been all done before the last month was out. In our former numbers will be found ample directions, but in general the young florist should get the person of whom he bought the plants to show him once how to layer them, for one practical lesson is worth a volume of reading, and no one will refuse to give it.

The late wet and windy season has done great mischief to flowers, borders well planted and arranged, look all but shabby and untidy, and this arises from the destruction of blooms about as soon as they appear; nothing beyond keeping all tall and slender stems tied up can be done; a few fair days will produce as much gaiety as ever.

Camellias have now set their blooms, and should be placed where the scorching sun does not reach them, and where they are protected a little from wind and heavy rain, nor should they have water. Those, however, who have a Camellia house, may, if they desire a continuous rather than a general bloom, put them all in their places, they will have plenty of flowers by Christmas; for, as the plants receiving no check, will keep advancing, the forwardest will be open months before the latest, and the flowers will be gay much earlier than if the plants were exposed to the open air, in the shade out of doors. Those who prefer to have general blooms, should keep the most backward in the house, while the forward ones, checked by the winds and cold evenings out of doors, will be retarded mate-

rially. This may be so managed as to bring all the plants in flower pretty well together.

Dahlias are now growing fast, and as the showery season advances, many of the young and inexperienced, as well as the old and obstinate, literally make skeletons of their plants, cutting away side branches and leaves whenever they select a bloom, under the silly idea that all the nourishment will be thus directed to the flowers. This is very erroneous, a Dahlia should be cut as sparingly as if every leaf was a loss; thin them only, to give their branches room, but by no means mangle the shoots; take away the buds near the one selected to bloom, and also any shoot that may come out opposite the bloom stalk, as the flower ought to be the end of the branch, without any growth beyond it, but on no account ought the side shoots of the same branch be removed under the idea of strengthening the bloom, they ought never to be taken off, except if any one be in the way of another flower, or the plant was too thick altogether. Mulching Dahlias, as many do, has its evils. It is true it keeps the surface wet by retarding evaporation, and may save watering with those who think the root is all that requires moisture; but, in the first place, the plant wants it more than the root (as may be seen by the improvement which takes place when the dew falls heavy); and secondly, the roots of a dahlia that is mulched come through the surface; and if by any chance during the whole season they once become dry, or nearly dry, the plant suffers almost beyond recovery. We have already given our opinion about watering. The plan of forming a basin round a plant, and giving it a certain allowance, however much that may be, is not a good one. The surrounding earth being parched as often as it is in August absorbs quickly whatever is poured in one spot, and, as we have said before elsewhere, the plants are in mud when first watered, and baked before they have it again. The whole ground on which they are planted should be watered as completely as if it rained a heavy shower. The evaporation, even in the hottest weather, so greatly assists the plants, that persons who have not tried it, will be astonished at the result; nor does it require more labour, for one watering of the general nature is better than six of the ordinary kind. One other, and it is an overwhelming objection to mulching, is the harbour it affords for insects; the earwig breeds in myriads among the latter, and no care or caution can keep them under. The slugs hide themselves by day, and half destroy a plant in a single night. Grubs of many kinds breed in dung, and altogether it is a most dirty looking, as well as unsatisfactory mode of treatment. The best way of staking the Dahlia is with one stick in the middle, and three or more round it, so as to keep the plant well supported against high winds and heavy rains, and they should be always staked and tied as they advance in

growth. The hints about watering Dahlias will apply to fifty other things. Depend upon this fact—the nearer nature is matched the better with all artificial watering. It is common enough to say, one shower of rain does more good than twenty waterings. Experience tells us as plainly that one watering in imitation of a shower of rain does more good than twenty in the ordinary way, but we do not mean a sprinkling just to wet the surface, but a soaking which shall sink into the earth in good earnest, and no shuffling.

BRUGMANZIA, OR DATURA.

THERE is now in the country, raised, we believe, or imported, by Mr. Knight, a double white *Brugmanzia*, possessing all the fragrance, and more than all the beauty of the *Datura Arborescens*, now called *Brugmanzia*; and as it is very easily propagated, we look for its speedy distribution. It will add much to our collections of greenhouse plants, and particularly to that tribe. We have now, red (*Sanguinea*), yellow (*Lutea*), single white and double white, all easily cultivated, with the advantage of keeping long in flower. We remember the *Sanguinea* was early figured and noticed in the *Botanist*, one of the best works of its day, and one which has been suspended some time in consequence of the loss of a plate, or of a drawing. It was said in that work:

The native land of this superb plant is Peru, in several provinces of which it is found, particularly near La Cruz, where it grows among rubbish; it extends, however, considerably to the north, and was met with by Humboldt and Bonpland on the banks of the river Mayo (Rio Putumayn?) between Almager and Pasto, in New Grenada, at the height of seven thousand feet above the level of the sea. One of the most interesting features in its character is the change of colour which the flowers undergo, which doubtless is more rapid in its native country than in our climate. To such flowers did the rover allude, when in the narrative of his adventures,

"He spake of plants, divine and strange,
That every hour their blossoms change,
Ten thousand lovely hues!
With budding, fading, faded flowers,
They stand the wonder of the bowers
From morn to evening dews."

WORDSWORTH.

It partakes of the noxious qualities of most of the members of the tribe to which it belongs, the seeds being extremely narcotic. Like the common *Datura stamonium*, the seeds of this plant, when taken in a moderate dose, excite the individual to the commission of many singular and fantastic actions; a property of which advantage is taken by the priests of that country;

for in the Temple of the Sun, in the city of Sogomoza, there is a famous oracle, the priests of which, by nasticating the seeds, bring on a state which the ignorant people consider a kind of inspiration. The fruit is employed by the Columbians to prepare a drink, called by them *Tonga*, which is of different degrees of strength; and if a very potent dose be not taken, it occasions only a slight stimulant action, followed by sleep; but a larger dose is productive of the most violent maniacal excitement, which it is said can only be removed by administering immediately draughts of cold water, but for which it is probable that venesection would be a more appropriate means of treatment.

The Peruvian names of this plant are *Floripondio encarnado*, and *Campanillas encarnadas*, from the colour of the flowers: by the Columbians it is termed *Bovochero*.

Introduction; where Grown; Culture.—Introduced into England in 1832, having been raised in the garden of Lady Gibbs, of Hayes Commou, from seeds collected at Guayaquil, in the state of Equador, and sent to her by Charles Crawley, Esq. Plants were also raised by Miss Traill, of Hayes Place, Kent, to whom Lady Gibbs had presented a portion of the seeds. By some authorities the *Brugmansia sanguinea* is stated to grow even to the height of twenty feet, generally with an undivided stem, terminated by a round leafy head. Its capsule grows to the length of eight inches. Our drawing was taken from a plant which flowered in November, 1836, in the choice collection of greenhouse plants, at Henderson's Nursery, Pineapple Place, Edgeware Road. It is somewhat hardier than *Brugmansia arborea*, yet it must be kept in the conservatory in winter, but will flower freely in the open air if placed in a sheltered southern aspect during summer. It prefers a friable rich soil.

The following particulars, which appear in the *Gardener's Magazine*, vol. xi., p. 267, afford information respecting the culture of those plants first raised by Miss Traill. They are practical, and consequently useful. "Of the three plants of this beautiful tree or shrub which flowered at Hayes' Place, two only had their blossoms red and yellow; the third had flowers of a yellow colour, which, though not so showy, were perhaps more elegant. The seeds were sown in 1832, and the plants, tried both in the conservatory and stove, grew fast, but did not show for flower; one was, in the summer of 1833, plunged in the open border in a pot, and left there by way of experiment. In the winter it died down to the ground; but in the spring sent up four vigorous shoots four feet high, which in September produced many flowers. The first frost of the subsequent winter so much affected it (although the gardener took every precaution), that, for fear of losing it, he removed it into the house. When he took it up he found that it had forced a long tap-root, above one foot

six inches in length, through the pot. Two other plants were planted, without pots, last summer, in the flower borders; and when they showed for flower, were removed into the border of the conservatory, where they flowered well late in the autumn. The plant appears to require more room for its roots than a pot affords; for those only grow luxuriant and blow which are in the ground. Miss Traill's gardener says, he does not think it will stand the winter without protection, as it is nipped by the first frost. He has not yet succeeded with the cuttings he has tried; indeed, it is difficult to obtain them from the plants. The plants in the conservatory which bloomed last autumn are now (March) coming into fine flower; and it is hoped that the time of the year being more favourable, seeds may be obtained from them. The last year the seed-pod formed well, but dropped off before it swelled to any size."

It strikes readily from eyes and cuttings; must be grown in the compost of geranium; shifted into larger pots every time the old ones fill with roots, and may be flowered in large pits or planted in the open ground. It is particularly beautiful in leaves.

THE FLOATING GARDENS OF CASHMERE.

CACHEMERE, which is one of the northern provinces of India within the Ganges, is surrounded by high mountains, and from its beauty and fertility has been styled the "Paradise of the Indies." Its capital is situated amidst numerous lakes, which are connected with each other, and with the river Vedusta, by canals, separated by narrow lines and insulated spots of ground. On these lakes are to be seen innumerable *floating gardens*, which are cut off generally from the body of the lake by a belt of reeds or sedges, so as to permit a free passage for the boats, which are to be seen continually skimming along the surface. The cultivation of these gardens is not only very singular and highly profitable, but also worthy of imitation in other countries which present similar facilities for this mode of horticulture.

The territory around the city of Cashmere is subject to annual inundations, which become more frequent and extensive on account of neglect on the part of the government in not checking the growth and accumulation of weeds and mud, which, of course, whilst they diminish the depth, considerably increase the superficies of the lakes. From evil, however, good sometimes arises. Various aquatic plants, as water-lilies, sedges, reeds, &c., springing in all directions from the bottoms of the lakes, and the boats which traverse their waters, taking, generally, the shortest or straightest lines they can pursue to their destination, the lakes are in some places cut into avenues, the parts being

separated by the beds of sedges or reeds. Here the farmer or gardener establishes his cucumber and melon floats, by cutting off the roots of the aquatic plants, about two feet under water; so that they completely lose all connection with the bottom of the lake, whilst they still retain their situation with respect to each other. When thus detached from the soil, they are pressed into somewhat closer contact, and formed into long beds, of about two yards in breadth; the heads of the sedges, reeds, and other plants of the float, are now cut off and laid upon its surface; and these are covered with a thin coat of mud, which is at first interrupted in its descent, but gradually sinks into the mass of matted stalks. Previously, however, to the latter operation, the bed-float is fixed in its proper place by stakes of willow being driven through at each end into the bottom of the lake; this will admit of the bed rising or falling, in accommodation to the rise or fall of the water. Now, by means of a long pole thrust among the reeds, &c., at the bottom of the lake, from the side of a boat, the same being turned round several times, a quantity of plants are dislodged or torn off from the bottom, and carried in the boat to the platform, where they are twisted into conical mounds or baskets, about two feet diameter at the base, and the same in height, terminating at the top in a hollow, which is filled with soft mud, and sometimes with wood-ashes.

The *floating gardener* has in readiness a number of cucumber and melon plants, raised under mats; and, of these, when they have four leaves, he places three plants in the basin of each cone or mound, of which a double row runs along the edges of the bed, at about two feet distance from each other. No further care is necessary, except that of collecting the fruit or produce; and the expense and labour of preparing these floats and cones are very trifling.

Mr. Moorcroft, a late traveller, traversed about fifty acres of these floating kitchen gardens, and he did not see above half-a-dozen unhealthy plants. He states, that he never saw in the cucumber and melon grounds in the vicinity of the populous cities of Europe or Asia, so large an expanse of plant in a state of equal health or luxuriance of growth.

The general depth of the floating beds is about two feet, and some of them are about seven feet broad; their length is indefinite. A guard is obliged to be kept on several parts of the lake, in order to prevent thieves from towing them away in the night; and if due care be not taken, a gardener who has hitherto watched the growth of his cucumbers and melons with a *parental* eye, expecting a rich harvest for his trouble, may find that his *pet* float has moved away in the night, he knows not whither; indeed, his only chance is to row as hard as he is able, to the other side of the lake; where he may, perhaps, find other *market* gardeners in the very

act of reaping that harvest, which he himself looked forward to so anxiously.

The cucumber and melon season lasts for three months and a half, beginning in June. From the first setting of the plants, until the time of pulling the fruit, seven or eight days constitute the ordinary period. Thirty full-sized fruits from each plant, or from ninety to a hundred from each cone, forms the average crop. The seed of the melon is brought annually from Baltistan; and in the first year, it yields fruit of from four to ten pounds each in weight; but if the seed be re-sown, the produce of the second year will not exceed from two to three pounds.

IPOMÆA HORSFOLIA.

THIS is a noble climbing plant. It appears that, like several others of this genus, the roots are tuberous, the stem is twining, smooth and woody, and of a dark brown colour, running twenty feet or more. Leaves alternately stalked, leaflets five or six, ovate, lanceolate, waved, glossy green or dark brown pointed, rather glaucous underneath; the flowers rise from the axils of the leaves on solitary foot-stalks, or on cymes of three, five or more on each. Calyx of five equal obtuse lobes. Corolla bell-shaped; the limb or spreading part at the extremity, five heart-shaped lobes of a rich shining rose colour.

This is decidedly one of the finest stove climbers in cultivation, and blooming as it does throughout the autumn and winter, it cannot fail to become generally known, and as generally admired. The calyx being of a dark brown, the tube of the corolla light pink, with the limb of a dark rose, has a most beautiful effect when contrasted with the dark glossy green colour of the full grown leaves. When in a young state, the plants do not push vigorously to top, but the tubers increase in size, after which it grows rapidly. It requires a temperature from sixty to eighty degrees: and with this heat, young shoots taken off with three or four joints, and placed under a bell glass, or in a close frame, will strike root in about a month or six weeks. Cultivated in a pot, and trained to a neat trellis, either plain or round, and in the form of an inverted cone, it would have a splendid appearance. This beautiful plant was raised from East India seeds in the garden of Charles Horsfall, Esq., of Everton.

The natural order Convolvulacæ, to which this genus belongs, contains many interesting plants; the recorded species of *Ipomæa* alone amounts to upwards of sixty. A few of these are showy annuals, and may be grown

in a sheltered border in the open air; nearly all the others require the aid of stove heat to bring them to perfection. Amongst the most interesting of the genus may be mentioned *I. bona-nox*, so remarkable for the variation of its leaves, some being entire, others deeply lobed. *I. quamoclit* is a beautiful annual, with finely divided leaves and dark red flowers. *I. insignis* and *tuberosa* have fleshy roots, as the name of the latter implies; and from the *I. japala* is obtained the well known drug of that name, of which upwards of 2000 pounds is annually imported into this country from Vera Cruz. Convolvulacæ also contains *Calystegia*, *Convolvulus*, *Cuscuta*, with about eight or nine different other genera, mostly twining plants of great beauty and easy culture. As indigenous plants, few persons are unacquainted with the beautiful red, white, and pink colours, of the common bindweed, so frequent in hedges and gravelly soils. As exotics, the *Convolvulus scammonia* and *batus* are interesting, the first as affording the gummy resin of that name, and the latter as being extensively used as an article of food in all the tropical climates. *C. Batutus*, or Spanish potato, is a native of the East and West Indies, and China; the tubers may be compared to dahlia roots, and are cultivated much in the same way as potatoes (*Solanum tuberosum*) in this country. The stalks and tender shoots, when in a young state, are boiled and used as greens; and in this country in the time of Shakspeare, we are told that not only were its fleshy roots and tender stalks and leaves eaten as potherbs, but they were candied and made into sweetmeats, and "kissing comfits." *Cuscuta* is a genus of parasites, two of these are not uncommon in Great Britain; three or four are exotics. The common native Dodder (*C. Europæa*) is a curious plant, entwining itself round whatever is within its reach, but mostly preferring heath or grass; and on a common two or three miles on the south-west of Esher, in Surrey, we have seen several hundred square yards of heath and other herbage so covered with it, that when seen in the dew of the morning at a short distance, the coloured thread-like leafless stems give the ground the appearance of being covered with a purple veil. The economy of the Dodder is different to any other parasitical plant in the germination of the seeds, which invariably takes place in the surface of the ground, but which it completely deserts as soon as it has acquired strength to cling to the stems or branches of some adjoining plant.

ON MANURES.

"By the Author of *The Domestic Gardener's Manual*."

It has generally been supposed that manures constitute the food of plants; and that they become so by being dissolved in the moisture of the soil, which solution is taken up by the absorbent vessels of the roots of plants; whence, under the form of sap, it is distributed throughout the vegetable structure.

The doctrine is plausible; but like that of the elaboration of the true sap in the leaves, and its descent into the inner bark, it is involved in doubt and uncertainty. It is, indeed, extremely difficult to conjecture what part manures can perform in the functions of vegetable nutrition; because it is quite certain that *not a single particle of the most impalpable powder* can be made to enter into the vessels of the roots; and it is equally so, that water—boiling water—will dissolve a comparatively very small portion only of the most reduced spit-dung. But every observing gardener or farmer must have remarked, that when manures are added to earths in due proportion, and not so as to glut the soil, the whole mass vanishes; and though for a time the earth be somewhat blackened, it gradually reacquires its natural tint, and loses every trace of decomposable substances which were added to it. Another fact is apparent, namely, that under the stimulus of a vegetable crop, land sooner frees itself from manure, than if it were left to act solely by its own unassisted energy. It is not long since the public were amused with a novelty; for the cold black mass of the dung-hill was dignified with the title of "*humine*"—whence, also, we were enabled to obtain another chemical compound, called the *humic acid*—which last was declared to be a combination of oxygen with *humine*, in a state of preparation easily soluble in the fluids of the soil; and to be thus the real and prepared (or evoked)! food of plants, and fitted to be taken up by their radical-absorbent vessels.

This assumption—the very dandyism of science—was at the time sufficiently exposed, and we now hear little more of humus or its relatives. But the doctrine of the dissolution of manures is still credited, and therefore it behoves every one who perceives its fallacy to expose the delusion.

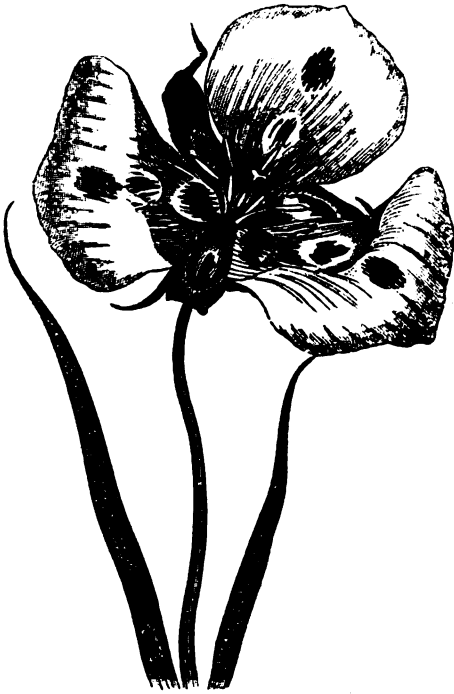
Manures, we have said, are but scantily soluble in water; but they are found to vanish, and in time to be entirely consumed. To become, therefore, the food of plants they must be decomposed (not simply dissolved), and thus be resolved into their elements. The analysis of black spit-dung by distillation, or by the application of fire, clearly proves what these elements usually are. A considerable volume of gaseous fluid is obtained, consisting of carbonic acid and hydro-carbonates. Some ammonia may often be traced; and these products prove the ex-

istence of bases, which, upon the application of fire, have yielded oxygen and hydrogen to form water, oxygen and carbon to form carbonic acid, and hydrogen and azote to form ammonia. But, besides these æriform fluids, there are solid matters which remain in the vessels exposed to the direct fire, and these are generally free charcoal, alumen, chalk, oxide of iron, and one or more neutral salts, in varying proportions.

Now, this decomposition, or one more slow in its progress, indeed, but closely resembling it in character, is carried on in the soil; and the only agent of the combustion that we can by any possibility trace is water.

Of this mysterious agency the wonderful discoveries of Mr. Faraday become the best of interpreters. At a future period it will be right to present a detail of the beautiful experiments of that philosopher, furnished by his own writings; but at present it must suffice to say, that a single grain of water was found to contain a volume of electricity equal to that of a powerful flash of lightning; and that to decompose such a minute drop, it required a stream of voltaic-electricity of intensity sufficient to keep a platina wire red hot during a considerable period. The decomposition of water appears, therefore, to be the only but all-sufficient cause of that of the manures deposited in the soil, and of those new arrangements of their elements into nutritive sap, and other products, which form vast and important offices in the economy of nature; one of which (and by no means the least consequential), is the renewal of the staple earths, by the deposition of the earthy matters of manures.

But we still lack a primary exciting agent—one which effects the decomposition of the water; and where are we to look for it? All nature—the air, vapours, solid matter, and elastic fluids—are replete with ethereal fire, the source of which is the sun—whose light is poured in beams over the earth and all its productions. This light (not one particle of which ever was, or can be destroyed), is the pure source of natural electricity; of which, living vegetable beings are the best, the readiest conductors. The vegetable plant, therefore, is the voltaic instrument, which not only gives the spark, but pours the stream of energetic fire, that decomposes and remodels the elements of water, and of those nutritive substances which otherwise would remain inert. There is theory in this—but it is theory founded upon facts, so grand, so imposing, and true, that it would be treasonable to science to withhold it. Let those who doubt experimentize for themselves. Let them at the same time recollect the groundless, visionary hypotheses, which at one time or other have been palmed upon credulity. In the mean time, other facts shall be adduced which may add support to the ideas thus hastily arranged.



CALOCHORTUS VENUSTUS.

THE first of this beautiful tribe of plants introduced into England were *Calochortus Elegans*, *C. Nitidus*, and *C. Macrocarpus*, the first white, the second purple, and the third yellow, in the year 1826, from Columbia; since which we had *C. Luteus*, from California, in 1831, which was yellow and spotted, *C. Splendens*, in 1832, from the same place, a beautiful white variety, with spots, and *C. Venustus*, in 1836, also from California. The latter, which is figured, is lilac, with darker spots. The name *Calochortus* is from *Kalos*, handsome, and *Chortus*, grass. It is what may be called a frame bulb, flowering in August; requires to be

grown in light sandy and peaty compost, with a little loam. The pots should be well drained, and the bulbs require no water until they begin to grow. They should be kept dry after flowering, and be preserved from frost in winter, but no more. *C. Elegans* flowers in June, *Luteus* in September, and the rest in August. It is a flower which lasts open but a short period. In the spring, when they begin to shoot, they should be put into fresh pots, and be gently watered as they grow. They are very beautiful, and somewhat curious, the flower reminding us of an iris, though not of so cramped a form as some of them.

THE CONSERVATORY.

UNDER this title we have one of those numerous books which, were there no gardening periodicals, might be found extremely useful, and probably in many parts of the country, where it is difficult to obtain periodicals, it may be useful as it is. The matter consists of a selection of plants fitted for a conservatory, with instructions as to their treatment from month to month; and the following will give an excellent idea of the manner in which this work is carried out for July. It is partly a botanical lesson, as well as a lesson on gardening.

GREENHOUSE.

GIVE plenty of air at all times; attend to water-

ing the plants left in the house, giving a good supply to all which require it. Syringe every evening.

In this month a general striking of greenhouse cuttings will be necessary to keep up a succession of plants.

CONSERVATORY.

As recommended last month.

FLOWER HOUSE.

Many of the cuttings of last month, if duly attended to, will by this time have struck root; pot off such into soils suitable to the several varieties.

Air, water, and syringing, as last month.

PLANTS COMING INTO FLOWER.

| | |
|-----------------------------|---|
| <i>Alpinia nutans.</i> | <i>Lobelia propinqua</i> , azurea, grandiflora, speciosa, Millerii. |
| <i>Alstræmeria ligter.</i> | — <i>Heterophylla.</i> |
| <i>Balsamina hortensis.</i> | <i>Mimosa.</i> |
| <i>Browallia elongata.</i> | <i>Ruellia ciliata.</i> |
| <i>Celosia cristata.</i> | <i>Serissa foetida.</i> |
| <i>Clethra arborea.</i> | <i>Anigozanthos speciosa.</i> |
| <i>Clitoria ternata.</i> | <i>Barringtonia speciosa.</i> |
| <i>Gomphrena globosa.</i> | |

ALPINIA NUTANS.

Class, MONANDRIA. *Order*, MONOGYNIA.

SCITAMINEÆ.

Native of East Indies.—Propagation, division.

This plant must be kept in constant growth in order to bring it into flower. The young plants, if strong ones, should be potted three in a pot, using No. 8 size, in the month of May, and preserved in a growing state until October, then shifted into No. 6, and plunged up to the rim in the tan; they will grow vigorously, and flower about this time the summer following. A great number of suckers are generally produced from the root; these should be cut away as they appear. When the flowering season is over, place the plant again in the flower-house, allowing the old stem to remain until the following May, at which time each plant will have made a strong shoot, then cut away the old stem, and any buds which may appear in the roots. Repot as before in the following soil: two parts loam, one part dung, one bog soil, with about one sixth part rough sand.

ALSTRÆMERIA LIGTER.

Class, HEXANDRIA. *Order*, MONOGYNIA.

AMARYLLIDÆÆ.

Native of Peru.—Propagation, division.

This fine little plant is worthy a place in every stove. To have it in bloom this month, repot it early in May, in compost, consisting of two parts bog soil, one part peat, one yellow loam, one rotten wood, one fourth cally-sand; then give a good watering, and place the pots in the warmest part of the flower-house near to the glass; continue to give a plentiful supply of water while they remain in this situation. When removed into the conservatory, the plants must be placed in the warmest part of it. As soon as the flower indicates the least decay, remove the plants into the flower-house; keep them in a growing state until the beginning of December, when withhold water until May, then proceed as before.

This dormant season is requisite for its blooming: were it not allowed a season of rest it would not flower.

BALSAMINA HORTENSIS.

Class, PENTANDRIA. *Order*, MONOGYNIA.

BALSAMINÆÆ.

Native of East Indies.—Propagation, seeds.

On or about the 20th of February sow the seed in any rich light soil. Place the seed pots in a frame where there is dung heat of about seventy-five degrees, give a gentle watering as soon as the plants appear; admit a little air early on fine mornings, but on dull days not until about noon. Always shut up early, and sprinkle the plants with water of the same temperature as the air in the frame. When the plants are about one inch in height, pot them off, one in a pot, in No. 60, taking care that the soil is of the same warmth as that from which they are removed, that they may not receive a check from cold at the roots; and this should be observed in all successive shiftings: place them in the same degree of heat as soon as they are potted. When the roots have filled the pots, shift into No. 48, and continue shifting until they are in No. 6, which sized pot they will fill by July, if kept in the heat above recommended: do not allow the flower buds to expand, but pinch them off as they appear, until you wish the plants to bloom: when in bloom remove them into the conservatory. Whilst they are in the frame air must be given to them freely, and they should always be kept as near to the glass as possible.

WATER.—This plant is of a very succulent nature, yet, owing to its rapid growth, it requires a great deal of water; do not, however, keep it always wet, but let it want water before you give it any, then give an abundant supply: water occasionally with dung-water.

SOIL.—Two parts yellow loam, one part dung; let this be used in every shifting, and let it be as rough as convenient.

BROWALLIA ELONGATA.

Class, DIDYNAMIA. *Order*, ANGIOSPERMA

SCROPHULARINÆÆ.

Native of Peru, 1768.—Propagation, seeds.

Sow the seeds early in March: as soon as the young plants are one inch high, pot in No. 60, one in each pot. Use the following soil: one part dung, one yellow loam, one leaf soil, with about one sixth part rough sand. If this plant can be grown in frames as directed for balsams, so much the better; but if this cannot conveniently be done, it will succeed in the flower-house. If the lead of each shoot be pinched off when it has attained the height of two feet, it will form a fine compact bush. Shift in succession, as recommended for the balsam; water occasionally with manure water.

CELOSIA CRISTATA.—THE COCKSCOMB.**Class, PENTANDRIA. Order, MONOGYNIA.****AMARANTHACEÆ.**

Native of Asia, 1570.—Propagation, seeds.

On or about the 20th of February, sow the seeds in rich light soil; give a gentle watering, and place the pots in dung heat at about seventy-five degrees. As soon as the seedlings are about an inch in height, pot them off into No. 48, four plants in a pot: place them in heat as before, giving a good watering.

AIR.—Admit freely on fine days early in the mornings; shut up by three in the afternoon, when sprinkle the plants with water of the same temperature as the air in the house. Let them remain in these pots until they show their heads of flowers, then select those which have the boldest and most compact combs, part them from the others, repot them in No. 48 singly; as soon as they have filled these pots with roots, shift them into No. 32, and continue to shift them as they fill each pot, until they are in No. 12, in which let them remain. When they are full grown remove them into the conservatory.

This plant requires much water when in full growth, and to be often sprinkled over the head when it is open, but as soon as the comb is compact, the leaves only should be sprinkled; water often with dung water.

SOIL.—One part brown loam, one horse droppings, one cow-dung, one bog soil. In this compost it will attain to a large size, if grown in a dung heat at about seventy-five degrees, and duly attended to with regard to air, and covering up in the evening. Always place the plants as near to the glass as possible, otherwise they will grow weak. They may be grown in the flower-house, or in a vinery, if treated as above directed, but not to the same degree of perfection.

CLETHRA ARBOREA.**Class, DECANDRIA. Order, MONOGYNIA.****ERICÆ.**

Native of Madeira, 1784. — Propagation, cuttings.

This beautiful greenhouse tree is of easy culture. It requires the treatment of other greenhouse plants. Pot in light loam, and always confine the roots in small pots, in proportion to the size of the head of the plant; water with dung water. With this simple treatment, it will flower in great profusion once in two years; it exhausts its sap with blooming, and is not able to mature flower-buds the succeeding summer. I have had plants, every shoot of which has produced a bunch of blossoms. If kept in large pots it grows too freely to bloom much.

CLITORIA TERNATA.**Class, DIAPHYLLIA. Order, DECANDRIA.****LEGUMINOSÆ.**

Native of East Indies, 1739.—Propagation, seeds.

A lovely blue flowering plant, requiring the heat of the flower-house. It succeeds well in peat with a little cally sand. It may be moved into the conservatory when in flower.

GOMPHRENA GLOBOSA.—GLOBE AMARANTH.**Class, PENTANDRIA. Order, MONOGYNIA.****AMARANTHACEÆ.**

Native of West Indies and Mexico, 1714.—Propagation, seeds.

Sow the seeds early in March, and treat them as the cockscomb, using water with a little caution, and potting in the following soil: one part leaf soil, one loam, one dung, with a little rough sand.

LOBELIA PROPINQUA, AZUREA, GRANDIFLORA, ETC.**Class, PENTANDRIA. Order, MONOGYNIA.****LOBELIACEÆ.**

Native of South America, &c.—Propagation, seeds, suckers, cuttings.

In the month of October, or early in November, go over all the plants, and take up the suckers that are strong: pot them in rich light soil, in No. 48 size pots; give them a good watering, and set them on the north side of a wall or hedge, where they will not receive much sun. Here let them remain until the latter part of November, then remove them into a cold frame, giving them all the air possible, by drawing off the lights for the whole day, and leaving them off during the night, unless there is appearance of frost, when cover up the frame with mats or straw. Keep them in this situation until the beginning of January, at which time shift them into No. 32.

SOIL.—One part mud out of a stagnant pond which has been collected and laid one year to meliorate, one part loam, one dung. In the pond soil the plants produce the finest coloured blossoms, but do not grow so large as when they are grown in one part loam mixed with it. After they are shifted they must be placed in the flower-house or early vinery, as near to the glass as possible. Give an abundance of water, as these plants succeed well in places of shallow water. As they fill their pots with roots, keep shifting them until they are in No. 8. In April let the plants be removed into the greenhouse, and from the greenhouse into the open air about the 20th of May. As they advance in growth, the flower stems should be tied to stakes. They may now be removed to the steps, or in front of the conservatory, where they have a brilliant effect if well supplied with water.

LOBELIA HETEROPHYLLA.

Native of Van Diemen's Land.—Propagation, seeds, cuttings.

This fine blue flowering plant is one of the loveliest of the genus. Mr. Paxton classes it among the annuals, whilst Mr. Loudon's

opinion is that it is biennial. I am inclined, from what I have observed of it, to agree with Mr. Paxton.

Sow the seeds as soon as they are ripe; place the pot in which they are sown on a shelf in the greenhouse, near to the glass; give a little water with a fine rose as it appears to require it: here let them remain until January, then pot off the plants, one in each pot, in No. 60; then place them in a gentle dung heat to assist them in obtaining a good root; when this is accomplished, they may be removed into the flower-house, placing them near the glass; this hardens the plants for the greenhouse, into which let them be taken; when hardy enough to grow well there, they may be shifted into No. 12.

SOIL.—Two parts loam, one part dung, one part dung, one leaf mould, with about one sixth part rough sand. Let the plants be trained to stakes set about four inches apart, round the edge of the pot. They will flower this month. This *Lobelia* should be in the possession of every lover of flowers; it is to be procured at most of the nurseries at a low price.

MIMOSA SENSITIVA.—SENSITIVE PLANT.

Class, POLYGAMIA. Order, MONŒCIA.

LEGUMINOSÆ.

Native of Brazil, 1648.—Propagation, seeds.

Sow the seeds early in February, and place the pot into a dung heat of about seventy-five degrees; as soon as the plants are two inches high, pot them into No. 60, one in each pot, using the following soil: one part leaf, one bog soil, one peat, and one cally sand. Keep them in the dung heat until they have made fresh roots, when remove them into the warmest part of the bark bed in the flower-house; shift them as they fill their pots, until they are in No. 32. This plant does not require much water.

RUELLIA CILIATA.

Class, DIDYNAMIA. Order, ANGIOSPERMA.

ACONTHACEÆ.

Native of the East Indies, 1806.—Propagation, cuttings.

This charming little plant, which is too much neglected, and but seldom seen except in nurseries, commences blooming in May, and continues until September. The soil most suitable for its growth is two thirds peat, and one third maiden loam. The proper time for propagating it is in March, making choice of the young shoots, with a little of the last year's wood. Plunge the pot in a dung bed with no bottom heat; as soon as the cuttings are rooted pot them off in thumb pots, and keep pinching off the end of the shoots to keep the plant bushy, which should never be above a foot high. It is very subject to damp, and should be kept in a dry airy part of the greenhouse. It should be watered with great care. G. EDWARDS.

Layrthorpe, York.

SERISSA FŒTIDA, FLORA PLENA.

Class, PENTANDRIA. Order, MONOGYNIA.
RUBIACEÆ.

Native of Japan, 1687.—Propagation, cuttings.

This little under shrub is of easy culture, requiring but little attention. It grows well in any light rich soil. It must be kept in the flower-house, except when in full bloom, when it may be removed into the conservatory for a short time.

This plant is considered a greenhouse plant, but it amply repays for the little room it occupies in the flower-house, by the greater abundance of bloom.

ANIGOZANTHOS SPECIOSA.

Class, HEXANDRIA. Order, MONOGYNIA.

HÆMODORACEÆ.

Native of New Holland.

This is an exceedingly beautiful variety; the flowers are produced on much branched panicles, with a long upright stem; the flowers are green with a scarlet calyx or base; the two colours blended together have a most singular and pleasing effect. What adds much to the value of the plant is, that it is a very rapid grower; it requires the protection of the greenhouse in winter: during the time it is coming into blossom, place it in a cold pit to prevent the flower stem from being drawn up too high. This is a plant we strongly recommend for every greenhouse. It also blooms well in the open border during the summer months. It grows best in equal parts loam and peat.

BARRINGTONIA SPECIOSA.

Class, DIADELPHIA. Order, PENTANDRIA.

MYRTACEÆ.

Native of the East Indies. 1786.—Propagation, cuttings.

A noble plant, with fine shining leaves, and most beautiful purple and white flowers. It attains the height of ten or fifteen feet before it blooms.

The heat of the house in which it is placed should vary from fifty to sixty degrees during winter, and should be very dry. It should have no more water than will keep its roots fresh and healthful: in the beginning of May, heat and moisture must be increased and continued until October. The chief point to be attended to in growing and flowering plants is to give them a season of rest, by keeping them cool and very dry during winter; they are then prepared to put forth when the growing season commences, which cannot be the case if they are always kept in an excited state throughout the year.

The soil in which the *Barringtonia* flourishes is strong rich loam, with a portion of rough sand, potted in March. It ought never to be allowed to get pot-bound, nor should it ever be

put into a pot that it would not fill with roots in six months.

This plant strikes freely from cuttings of the half ripened wood, in a good bottom heat, one cutting in a pot. As the pots fill with roots, shift into the next size, and keep them in the same heat until the young plants are about one foot in height, when place them in the stove, and treat them as above directed.

From this extract the plan of the work can be well understood. It is rather more brief in some things than is convenient for very young gardeners, but is doubtless acceptable.

CULTURE OF THE CACTUS.

By Mr. Green, Gardener to Mr. Antrobus.

THE compost that I use is an equal quantity of light turfy loam and pigeon's dung, and one-third sheep's dung, exposing the mixture one year to the influence of the summer's sun and winter's frost, to mellow; when wanted for use, I add one-third of sandy peat, in both cases mixing them well together.

I grow the young plants from February to July, in the forcing flower-house, kept from fifty-five to sixty degrees Fahrenheit; I afterwards remove them to a shelf, in an airy situation in the greenhouse, exposed to the mid-day sun, giving them plenty of air and little water. The plants that I want to flower the following September, are placed in the forcing-house the first week in December, giving them very little water for the first ten days, and gradually increasing the water as the plants advance in growth. About the 1st of February, I stop all the young shoots, which soon become well ripened; from this time I decrease the quantity of water until they become quite dry, in order to throw the plants into a state of rest. In the beginning of March I replace them in a cold shady situation in the greenhouse, keeping them quite dry until the following June, when I put them again in the forcing-house, treating them as before. For plants to flower in August, I place a quantity more in the forcing-house, the first week in January, treating them the same as those for September; only they are put to rest in the greenhouse a fortnight later, and replaced in the forcing-house one week sooner.

The first flowering plants are put in the forcing-house at the end of January, and will come into flower about the middle of March; when these plants have done flowering, and are removed from the drawing-room or greenhouse, I prune out most of the old shoots that have flowered, so that the plants are furnished regularly with young shoots for flowering the ensuing year; the plants are also placed in the forcing-house for ten days, to ripen the young wood and dry up the moisture, and are then put to rest in the greenhouse as usual, such plants

will flower a second time in October; others, put in the forcing-house in the middle of February, will flower about the end of April; if then pruned and dried, and put to rest as before, will flower a second time in November, and so on in proportion. I replot them at all seasons whenever the plants may require it, always observing to keep the pots well drained with pot-shreds, that the moisture may pass off readily; this process may be considered troublesome, but superior growth and abundance of flowers, amply repay the care bestowed. By the above treatment, the *Cactus Speciosus* and *Jenkinsoni* have generally produced from ninety to a hundred fine expanded flowers at one year old. The plants which I brought to the Society were about two years old; the *C. Speciosus* bore two hundred flowers; *C. Speciosissimus* seventy-two, and *C. Jenkinsoni*, one hundred and ninety-four. I prefer growing them in wooden tubs, with wire stakes fixed to the tubs, to the usual mode of supporting them by stakes driven into the ball of the plant, which I consider injures the fibre, and makes the plant appear unsightly.

The following is from another pen:—

CACTUS TRUNCATUS.—I have cultivated this plant many years; and do not know one, that when well managed, produces a greater profusion of bloom. Some of my neighbours graft it on a long stem; but this, I think, adds nothing to its beauty. My plan is to grow it on its own bottom; and I have now several bushy plants, two feet across, and which bloom in such a way as to be unequalled by any other plant with which I am acquainted. My plan of cultivation is very simple for small plants. I use a compost of very sandy loam, with a little peat earth and sand, shifting my plants annually or oftener as they seem to require it. They are, however, always allowed to be well rooted before they are removed into larger pots, and this is the only directions I can give for this operation. As the plants attain to a larger size, I increase the strength of the compost, using rather less sand; and when they have arrived at what I term a blooming size, I pot them in the same compost I use for the pine apples, being a free loamy soil, with a mixture of sheep's dung and sharp sand. This I have prepared at least twelve months before I require to use it, a circumstance of greater value to the plants than is generally supposed. In potting plants, no matter what kind, there is one principle to which I allow no exception; namely, that all plants whatever, must have the soil in their pots rather dry than otherwise, and never to be potted either when the soil about their roots, or that with which they are potted, is wet. There is another point on which, in the successful cultivating the Cactus, nearly every thing depends, that is, the rendering the soil in the pots as hard as it can be made; and if quite dry when used, there is nothing to be apprehended from making it too firm, if only the hand is em-

ployed in consolidating it. When the plants are in a dormant state, they are allowed to become dry; but when growing or flowering, the soil is kept carefully moist, but they must at no time be supplied so freely as to destroy the roots, and this is a common case, and one of the reasons why large plants of this species are so seldom met with.

When I am anxious to get forward a young plant rapidly, I remove all the flowers as they appear, and dislead about every other young shoot, just when they are commencing to grow; thus they are kept thin of shoots when young, and when the main branches have extended to a considerable length, I then allow them to become bushy, and keep them in pots from eleven to fourteen inches across.

A temperature so high as that usually kept up in plant stoves, is by no means indispensable in the cultivation of the Cacti, more especially the Epiphyllums, or flat stemmed kinds, these with the *Cereus speciosissimus*, and most of those varieties obtained between it and the former, may all be cultivated and flowered in a greenhouse. It must not, however, be inferred from this, that they can either be grown or flowered so freely in this way as when exposed for a month or six weeks in spring to a temperature of sixty or seventy degrees. At Bretton Hall, we had a plant of *Cereus speciosissimus*, with several stems from three to four feet in height, planted in the border of a greenhouse conservatory. Previous to planting, a slight mound of earth was raised, composed chiefly of sandy loam, peat earth, and brick-dust; in this the plant was carefully placed, the little mound was then rendered compact, and planted with *Lycopodium Denticulatum*, there the *Cereus* grew vigorously, and to the best of our recollection, produced six or seven flowers the following spring; if this plant has continued to thrive as it did during the first three years after planting, we may fairly presume it is now the largest one of the kind in this country.—*Marnock*.

WEEKLY JOURNAL OF GARDENING.

AURICULAS.—Those who exhibit will do well to repot their plants now, and especially any which look at all inclined to be unhealthy.

DAHLIAS.—Propagate all valuable sorts, either with a little bottom heat, or under a hand-glass, in an old cucumber frame.

THE RED SPIDER.—To keep this destructive enemy in check, keep a constant exhalation up by syringing the plants infested frequently, and watering the paths of the houses, which should be closed immediately after being saturated.

SUCCULENTS of all kinds may be propagated. Place the slips of Aloes, Cacti, &c., in the pots singly; defend them from the mid-day sun.

SEEDLING TREES of all kinds should be transplanted.

HEARTSEASE may be propagated like weeds, if the slips be taken at a joint, and placed either close under hand-glasses in the shade, or round the sides of pots, plunged in a south border. They may also be spread out on the surface, and sufficient earth placed on them to strike every shoot in the way of a layer.

BOX EDGINGS should be clipped into form, and pretty close to the ground.

BULBOUS ROOTS of all kinds, whose leaves have died down, may be safely taken up for removal, or for storing.

CARNATIONS and **PICCOTEES**, continue to lay and pipe for stock, card and tie blooms for show.

PINKS, pipe for general stock.

RANUNCULUSES and **ANEMONES** take up and clean for storing. Sow seed for new varieties.

GREENHOUSE and **STOVE-PLANTS** shift or earth up all that require it, especially earth up Orange and Lemon trees with rich compost.

CAULIFLOWER seed sow for plants to keep through the winter, in frames or under hand-glasses.

Keep a general look out for weeds and get rid of them before seeding; the crops will always reward the labour of keeping them clear.

AMERICAN plants in pots may be placed in a cool situation; Camellias also, and such Botany Bay plants as have perfected their growth after blooming.

EARWIGS are so destructive at this season, that too many modes of destroying them cannot be employed, especially with Dahlias. Bean-stalks cut about a foot long, and placed among the foliage, will be found several times a day to contain earwigs, which a boy may be kept constantly examining, by blowing through them into a watering-pot, containing strong ley of salt and water. Small flower-pots, half filled with moss, may be also placed on stakes, and frequently examined, a few days perseverance will so overcome them that you will be able to calculate on a bloom, which, without this means, you may look for in vain.

GLEANINGS AND MEMORANDUMS.

ROSE TREES.—"There is a classical custom observed," says Camden, in his *Britannia*, 1603, time out of minde, at Oakley, in Surrey, of planting rose trees on the graves, especially of the young men and maidens, so that this church-yard is full of them. It is the more remarkable, since it was anciently used both among the Greeks and Romans, who were so very religious in it, that we find it often annexed as a codicil to theyre wills (as appears by an old inscription at Revenna), by which they ordered roses to be yearly strewed and planted on their graves. Old Anacreon, speaking of it, says that it doth protect the dead."

POPE'S IDEAS UPON GARDENING.—The lights and shades in gardening, said Pope, are managed by disposing the thick grove work, the thin, and the openings in a proper manner: of which the eye is generally the best judge. Those clumps of trees are like the groups in a picture (speaking of some in his own garden). You may distance things by darkening them, and by narrowing the plantation more and more towards the end, in the same manner as they do in painting.

VEGETATION.—Nothing can be more singular than the unaccountable manner in which plants spring up on certain occasions. Thus after the great fire of London in 1666, the whole surface of the devastated city was in a short time covered with a luxuriant crop of the *Sisymbrium irio* in such profusion, that it was calculated that the whole of the rest of Europe did not contain so many specimens of this plant. Again, wherever a salt spring breaks out at a distance from the sea, its vicinity immediately abounds with salt plants, although none grew there before. When lakes are drained, a new kind of vegetation springs up. Thus, when the Danish island of Zealand was drained, Vilny observed *Carex cyperoides* springing up, although that species is naturally not a native of Denmark, but a native of the north of Germany.—*Dr. Graves's Introductory Lecture.*

ARTIFICIAL METHOD OF RIPENING FIGS.—An interesting fact is related in the *Conversations on Vegetable Physiology*, respecting an artificial mode of ripening figs:—"In hot climates, the fig-tree produces two crops of fruit; and the peasants in the isles of the Archipelago, where the fig-tree abounds, bring branches of wild fig-trees in the spring, which they spread over those that are cultivated. These wild branches serve as a vehicle to prodigious numbers of small insects of the genus called *Cynips*, which perforate the figs, in order to make a nest for their eggs, and the wound they inflict accelerates the ripening of the fruit nearly three weeks; thus leaving time for the second crop to come to maturity in due season."

GARDENS IN LONDON.—Some London houses have a melancholy little plot of ground behind them, usually fenced in by four high white-washed walls, and frowned upon by stacks of chimneys, in which there withers on from year to year a crippled tree, that makes a show of putting forth a few leaves late in autumn, when other trees shed theirs, and drooping in the effort, lingers on all cracked and smoke-dried till the following season, when it repeats the same process, and perhaps, if the weather be particularly genial, even tempts some rheumatic sparrow to chirrup in his branches. People sometimes call these dark yards "gardens," it is not supposed that they were ever planted, but rather that they are pieces of unreclaimed land, with the withered vegetation of the original

brickfield. No man thinks of walking in this desolate place, or of turning it to any account. A few hampers, half a dozen broken bottles, and such like rubbish, may be thrown there when the tenant first moved in, but nothing more; and there they remain till he goes away again, the damp straw just taking as long to moulder as it thinks proper, and remingling with the scanty box, and stunted evergreens, and broken flower pots, that are scattered mournfully about a prey to "blacks" and dirt.

NEW FLOWERS AND PLANTS.—Many a flower and plant may be fairly sent out as new, with a certain knowledge that in a short time it will be worthless, and yet the vendor be honest. For instance, if a man had a red Heartsease, of the worst possible form, he would be justified in getting a large price, though the fact of its being immediately beaten by its own seedling, would stare every one in the face. But a new thing ought to be a new colour, or a better than we already have of the same colour.

PROPERTIES OF THE FUCHSIA.

WITHOUT going minutely into the properties of this flower, it is well, perhaps, that we should mention some facts which will be useful in selecting a few for purchase, especially as we have seen the most intolerable rubbish cultivated in great numbers. First and foremost, it is absolutely necessary that the petals of the inside be a different colour from the outside, for contrast is essential; those, therefore, which are all of a colour are comparatively worthless. The brighter the scarlet outside, and the deeper the purple inside, the better the flower. The loss of the rich purple is fatal, therefore, to the scarlet Fuchsia. But a Fuchsia may be white outside, and in that case a bright scarlet corolla would be a good contrast, though a purple would be better. The form of the buds or drops before they open cannot be too round. We do not mean that they ought not to have tubes, we mean the end should be globular, because that form is the most beautiful before opening, and gives the widest petal, or, rather, calyx, when it is open; but whether the flower with its tube be long or short is immaterial, and purely a matter of taste. The foot-stalk of the flower should be long enough to let the bloom fall beneath the leaves, and not long enough to let them hang into the branch below them, for the flowers should all hang free of the foliage. The corolla or purple should be large and close, and the calyx should open quite horizontal, or reflex, to show the purple out well. The anthers should hang conspicuously below the purple, and the pistule below them. The beauty of all flowering plants depends upon the quantity and distribution of the bloom; hence, all plants whose flowers are hidden among the leaves are

discarded, unless they are prized for their foliage alone, as is the case with many evergreens ; so, also, if there be not an abundance of them, or they are so distributed as to give an undue proportion of foliage, they are worse for it. It is this which makes all the difference between garden plants and weeds. Even down to the most insignificant annuals now cultivated, it will be found that the favourites are those which bloom abundantly and have little foliage. The best of our Fuchsias are remarkable for the abundance and graceful distribution of their bloom. The varieties of Globosa are splendid examples of this quality. The varieties of Fulgens are as remarkable for the reverse ; their foliage is large, coarse, and ugly, and the blooms hang like bunches of candles at the ends of the strong shoots. Nevertheless, novelty, and the remarkable contrast which they presented to every thing we already possessed, secured its popularity. But in hybridizing this genus of plants care should have been taken to save the seed from varieties of the best habit ; or, if saved from Fulgens, it should have been crossed with those of fine habit, for it is impossible to conceive a worse habit than Fulgens. At its very best there is too much of the plant bare of flowers, and there is hardly any excuse for saving any new ones of the same style of growth. The flowers of a Fuchsia should come out at the base of every leaf all over the plant, and we have many which do so. The best flower we could form or imagine would hardly compensate for a bad habit. We should therefore discard at once all those which have their flowers at the ends of branches only, and we should value very little any that had flowers all of one colour. We do not mean that we could not be induced to name and send out any that were all of a colour, because there may be sufficient novelty to justify a name and a first price : for instance, if one were perfectly white or purple, it would be a very great curiosity, and be very beautiful, but there is no excuse for sending out scores of very coarse red things, of ugly growth and great sameness, to the confusion of those who wish to grow collections, and the great loss of those who only wish to grow a few of the best. Why, the dahlia in all its glory, when people were novelty mad, hardly perplexed us so much as these weeds of Fuchsias. We have tried at present in vain to select a dozen that we think worthy of cultivation by a private grower, but if we were to do so, we should put Globosa Major at the very top. Ricartonii, Formosa Elegans, and Venus Vitrix, would certainly be of the number ; and, if we must do without the purple, and have one of the long-bloomed varieties, it should be Moneypennyi ; as to the others, we must take our time. Smith's new one is a novelty, of good habit and large flower, and must stand high at present ; but the Fuchsia is only in its infancy, and we shall soon see

the present race beaten altogether. The tendency of the outside to a greenish white colour is very general, and a great number of the new ones are of that character. Chandlerii, for instance, which is really a good habit, is of that description, and wants colour. Rosea Alba is like Venus Vitrix, but worse. Tricolor, as it is called, may be placed in the same class ; there is no distinctness, and though Venus Vitrix is pleasing and novel, and of good habit, it is by no means what we could set down as a good thing, and will doubtless have to give place to much better characters as we progress. We have offered these few remarks to stem the torrent of rubbish that seems pouring in upon the world of floriculture from all quarters, and at least to guide in some measure those who are raising seedlings, but we shall follow up the subject shortly. All we need say now is, that we have seen a collection of sixty, all named, and all in flower, and two thirds of them vary so little, that we could not have believed it possible to let such out as distinct varieties.

ON THE TURNIP-BEETLE, COMMONLY CALLED THE TURNIP-FLY.

THE turnip-beetle (*Halitica nemorum*) being so universally spread over the country, it becomes impossible to exterminate it. From its manner of breeding it is obvious that no injury, or none of any consequence, is done to the turnip by the larvæ, the mischief being effected by the perfect insect, which, having secreted itself through the winter, comes from its hiding-place at the return of spring, with a keen appetite, and is attracted from all quarters by the scent of turnips, with as much certainty as the crow is attracted by the smell of carrion, to feast upon its favourite food. The inefficacy of lime, as an antidote, has been strikingly apparent during my observations, where the land was dressed with it (forty bushels to an acre) immediately before the seeds were sown ; and when the plants came up, and the beetle was observed attacking them, lime dust was thrown over them, so that many of the plants were quite white with a coat of it. Notwithstanding this, I found as many flies upon the whitened plants as upon any of those which were free from lime, and they were eventually devoured. In one part, where the fly was particularly numerous, I marked out a small square, and with a syringe washed over every plant within it, singly, with sulphate of potash ; but, although it was so strong as to destroy some of the plants, and to leave a white sediment, when dry, upon all, I found the flies upon them the next day nearly as numerous as before this application. I wetted some of the plants with distilled water (spring-water does not adhere so well to the plant), and these were entirely free from the beetle so long as they remained wet ; and if one happened to alight upon a wet plant,

it instantly sprang off again. But of all the numerous applications which I tried upon the leaf, none were effectual in deterring the fly, though detrimental to the plant itself; and I found my attempts of this kind must be unavailing; because, although the upper side of the leaf may, by any preparation, be rendered unpalatable, and even poisonous, to the insect, it will still eat away the *under side* with impunity, and leave nothing but the upper epidermis, or skin.

I next tried various matters, mixed up with or strewed upon the earth, that might be offensive to the fly, by the odour or effluvium exhaling from them. The first of these was powdered sulphur strewed over about one-tenth of an inch thick: the effluvium from this was perceptible to me, when standing near it, if the sun was shining; but so far from deterring the beetles, I thought they appeared more numerous in this spot, and it certainly improved the appearance of the plants growing in it.

Amongst many other things, I tried snuff, and assafœtida, and a box of the powder for preserving furs from moths, sold under the title of *Anti-tinea*, but none of them had the slightest effect. Latterly I found it more convenient to try the effect of various substances on the side of a cage, containing a great number of the beetles; and having placed a small piece of carbonate of ammonia there, to my great delight, all the beetles drew away from it, and kept on the further side of the cage; upon changing its position to the side where they had all congregated, they immediately began to move away again. I then took a glass tube, containing a number of them, and placing the lower gauze wire upon a large piece, so that the effluvia from it might pass through the tube, when they instantly began to leap violently, but in a few seconds fell to the bottom motionless; I immediately removed them, but they were quite dead, for not one recovered, though laid upon fresh leaves. I congratulated myself on having at last found the object of my search, and went the same evening up the hill, and sowed a patch with turnip seed; and on the fourth day, when I expected the plants to appear, I strewed it over with the ammonia, broken into fragments about the size of a pea, but when the turnips began to show above ground, my disappointment was extreme, to find that the effluvia was destructive to the young plant if a bit was lying within an inch of it; and those plants which were not injuriously affected by it, were attacked by the beetle. I still think, however, that the antidote must be sought for in some effluvium or odour, which may be either offensive to the insect when near, or so overpower the scent of the turnip, as to prevent the beetle from distinguishing and being attracted by it. Or it may, perhaps, be equally advantageous to divert their attacks by a more attractive food, such as sowing the *white stone turnip*, mixed

with the Swedish turnip; for I have *invariably* found, where this has been done, that the former are first attacked, and sometimes, indeed generally, nearly destroyed before the latter have been touched, and by that time have grown to such a size, as not to be materially injured by them; and in seasons when the beetle has not been very numerous, the "*Swede*" has not had a single puncture upon it, whilst every leaf of a *white stone turnip*, by the side of it, has been pierced full of holes.—*Entomological Society's Transactions.*

MAGAZINE OF BOTANY.—BOTTOM HEAT.

THE beauty of this work has secured for it a large share of popularity, and it is well earned; but there is such a thing as over-doing a subject. A portrait is only to be valued for its faithful likeness to the thing portrayed, and it is especially ludicrous to make a subject that no one can recognise. The plates this month are very well executed, but one subject, the *Fuchsia Exonensis*, is so unlike the original, that no one could by any means know it was meant for that flower, unless the name were attached to it. In other respects the Number is as good as any of its predecessors. We take the following article on bottom heat as a specimen of the practical articles:—

Roots are to plants something like what the stomach is to all kinds of animals, for, where the functions of this are diseased, or fail to act efficiently, the whole system is speedily rendered unhealthy. And it may be laid down as an axiom of unvarying application in the culture of exotics, that where there is an abundance of healthy roots, any specimen that is otherwise properly treated will be in a flourishing state; while the converse of this will always lead to the opposite results.

A principle nearly akin to this was recognised in our last Number, where the effect of soils was in question. It is here more prominently stated, in order to consider the influence of another and very different agent; for whatever good may accrue from the judicious selection and mixture of soils, the advantage will be little better than nugatory, as regards stove plants, if they are left to become cold, and therefore liable, even with the best mechanical appliances, to get sour or saturated.

In the earlier times of plant cultivation, scarcely any stove species was grown without being plunged in fermenting bark, or other source of bottom heat; and though the appearance of such plants certainly will not endure comparison with modern specimens, that are reared without such a stimulus, the latter fall almost equally behind those which, besides every other known advantage, are yet subjected

to a heating power from beneath. It is thus proved that it was not the use of bottom heat, but the absence of various additional expedients now in vogue, which kept the plants of olden cultivators in an inferior condition; and hence, that it is not wise to discard a thing which the most trivial experiment will show to be of the utmost benefit.

As we have asserted the importance of having healthy roots to plants, we shall now endeavour to indicate how the application of bottom heat is likely to bring about that desirable object. That plants cannot thrive much without good roots may be seen by cramping them in very small pots, when the stunted specimens so common in China will be obtained. But if those very specimens, even after they have been so treated, were to be planted in a free congenial soil, and have every other necessary assistance, they would soon develop themselves in a more natural and healthy manner, because the roots would then have proper play, and receive all due stimulus.

Now, it well known that certain conditions of temperature, light, and moisture, are essential to the growth of all vegetables; but it is sometimes forgotten that a particular degree of these are quite as requisite to the roots as to the more exposed portions. To speak only of heat at present, a plant brought from the tropics may be excited by the application of atmospheric heat, and moisture; but its developments will never be so fine and so luxuriant as they would be if it had at the same time the aid of a stimulus to its roots from below. Growing branches and foliage may serve for a while to impel the roots to push forth. They will not, however, long maintain their action, on account of themselves becoming weak and languid when unsupported by the roots; and unless the latter begin and remain to be the first in motion, or at least advance concurrently with the more exposed parts, true healthiness or productiveness (that is, the highest degree of both) can never be realised.

To attain the condition last mentioned, it is requisite that the heat (which is the principal stimulant) be as great, or nearly as great, in the pot as it is in the air. Where no artificial temperature is employed from below, it need not be said that the soil in pots, in ordinary cases, must be far colder than the atmosphere; and when, as generally occurs, the rays of the sun cannot reach that soil, it will often become so cold as to render the water administered in some degree stagnant and putrid, in spite of the best drainage.

The philosophy of bottom heat, then, is by making the soil in which plants are growing nearly as warm as the atmosphere, and by thus exciting the roots, and keeping them growing as fast as the branches, to give a constant and healthy supply of nutriment to the latter, and

so to promote the entire well-being of the plant.

That such a practice is conformable with the procedure of nature in the countries from whence our stove plants are derived, is perfectly clear. Vegetation there grows mostly in the rainy season, which is immediately succeeding the dry season. During the dry period the earth is almost baked with heat, and thus, on the fall of rain it becomes a literal hot-bed, sending forth a nearly incessant volume of vapour. Here, consequently, is the natural method of furnishing bottom heat.

But the uses of a direct supply of heat to the roots of plants do not end with the excitation of the roots simultaneously with that of the branches. They are of a much more general and varied character. The soil, besides being thus made warm and genial, is prevented from holding too much water, and the practice is therefore a great auxiliary to drainage, which is one of the most influential agents in the culture of plants. With this perfection of drainage, too, there is a constantly attendant augmentation of fertility; for a plant in soil through which fluids can circulate rapidly never loses its productiveness, when other circumstances are alike propitious.

Bottom heat is further beneficial as affording the means of guarding the roots of plants from the casual fierceness of a summer sun, of keeping them more uniformly moist, and of diffusing a delightful moisture through the atmosphere. We assume here, however, that the pots are plunged in the heating material, a practice which we consider inseparable from the system. Too frequently, in hot summers, when the sun is shining in all his fervour, his rays, falling on the sides of pots containing tender plants, speedily dry up the soil and injure the roots. This is avoided by the plunging attendant on the use of bottom heat. By watering, likewise, the material in which the pots are plunged, as well as the soil within them, the moisture can penetrate the pots from without, and keep up a more equable supply, without the trouble of such oft-repeated waterings as are necessary in common circumstances. The same moisture, also, existing in the bed employed for plunging in, will spread itself by evaporation through the air of the house, and so maintain it in a far purer, more favourable, and unfluctuating state, than watering the paths, flues, or hot-water pipes would do.

We shall notice but one more benefit arising from the employment of bottom heat, which is, that it hastens the development of the branches of plants in the early part of the season, by this means giving them more time to mature their shoots, and even itself contributing to the accomplishment of that end. It is the most appropriate way of assisting their spring and summer growth; and, according to our long-since declared views, the spring and summer

constitute the times at which alone plants require artificial stimulation.

Although so few cultivators evince a consciousness of the advantages of bottom heat on a large scale, it is easy to show that all acknowledge its value in some instances. In propagation, for example, cuttings or seeds of plants from warm climates are very rarely put in without being plunged in a bed that is heated from below. Gloxinias, Gesneras, Achimenes, and other fast-growing plants, are, moreover, seldom cultivated in a stove that is not furnished with bottom heat. And if the principle that bottom heat facilitates superior growth, or the formation of roots, be thus universally subscribed to in a practical way, there can surely be no reasonable objections to the general carrying out of that principle, so as to include every kind of stove plant.

In respect to the fittest mode of creating bottom heat, there will probably be a difference of opinion among practical men, some preferring that produced by bark, as the cheapest, and others deeming that caused by a hot-water apparatus superior, because most easily regulated. Most unquestionably the bark-bed is the simplest; but it requires occasional stirring and renewal, which may be inconvenient.

Whichever method may be fixed upon, there should be a raised brick-pit for applying it;—in the centre of the house, if it be a span-roofed erection, and forming the body of the house, whether there be or be not a path at the back of the pit, in a structure with a lean-to roof. The height of this pit and of the paths must be determined by the height of the house, and the tallness of the plants intended to be grown. For plants of from one to three or four feet in height, the top of the pit should not be more than four and a half or five feet from the roof, and about three or four feet above the walk. Half a brick will be quite a sufficient thickness for the walls.

If bark is to be used, the bottom of the pit should be filled, to the depth of two or three feet, with pieces of the rough branches or roots of trees, mixed with some rough stones, in order to form a thorough drainage. On these, the bark should be placed to the depth of a foot or eighteen inches, according to the size of the pots to be plunged; and the actual depth of the pit will thus be four or five feet, for it should be filled a little above the surface-level, to allow for a little settling. When the heat of the new bark is somewhat subsided, and the whole is thoroughly settled, the plants may be plunged into it about half the depth of the pots, putting them in up to the rim after the temperature has been still further lowered. By the use of heat-sticks, the amount of heat may always be ascertained; and on its falling away considerably, the plants can be taken out, and the bark turned over. Subsequently, the addition of a little fresh bark will be necessary at each stirring.

Where heating by hot water is chosen, the pipes should be arranged in the lower part of the pit, and chambered in by thin slabs of stone or slate, which should be perforated to allow the heat to pass through them. A layer of gravel-stones, or broken free-stone, or rough brick rubbish, should then be placed on the partition thus made, and on that, again, there should be a layer of sawdust or bark which has lost all its fermenting properties, to plunge the pots in. This may be of any required depth. As a substitute for stone or slate to cover in the chamber, rude logs of wood, laid pretty closely together, may be found of service; and an open gutter may be used instead of the common pipes for heating, if it should be more approved.

To destroy wood-lice or other insects that may collect in the bark, sawdust, or whatever else is employed, the readiest plan is to pour boiling water over it when the plants are taken out for shifting, or when it is being turned over. Those disagreeable Fungi that likewise appear and spread so rapidly on bark, may be removed by the same means, even while the plants are in the bed, if the water be applied carefully, so as not to go near the roots. It will be of no use, however, if the water is not boiling at the time it is poured on.

The kind of plants which we have had in view almost exclusively throughout this paper, are those which require the temperature of a stove. Of these Orchidaceæ will stand first; for they are perhaps the most benefited by bottom-heat, since plunging shelters their roots so thoroughly, and the atmospheric moisture obtained through watering the heating material is so congenial to their nature, while their notorious love of warmth is also thereby satisfied. From observation, and from the very nature of the plants, we can assert that no treatment induces such a beautifully healthy growth as that in which bottom-heat is a leading feature.

Various other sorts of stove-plants are included in our recommendation. There is the tribe which has succulent habits, such as the Gesneras and Gloxinias already mentioned, and for which bottom-heat is mostly thought essential. Then there are the handsome shrubs, such as *Ixoras*, *Rondeletias*, &c., to which a little bottom-heat is exceedingly advantageous; giving them altogether an improved aspect, and, by developing and ripening their wood more perfectly, increasing their production of bloom. There is further, the interesting class of climbers, which are often unfitted for blooming by being planted in some low corner, where their roots get too wet and cold. We know nothing so efficacious as bottom-heat (in connexion, of course, with other needful aids) in bringing climbers into a blooming state. It makes their wood healthy, and enables it to fulfil all its natural functions; and where this is done, the plants are sure to flower well.

We shall not, however, carry our enumeration to a greater length, as all stove-plants, whether coming beneath the divisions we have specified, or belonging to different tribes, will necessarily fall under the same rule; and when we glance at existing collections of these objects, and observe the comparatively trifling advance in their cultivation which has been made of late years, we can hardly hesitate to attribute it, in great part, to the neglect of bottom-heat. It affects not our argument in this or any other case to say that plants are made to look very well, to grow luxuriantly, and to flower vigorously without the aids of the methods we advocate. The question is, would they not be improved by the treatment we prescribe? And if they would,—as, we think, no one will deny,—it would be difficult to justify indifference to such superiority.

Far beyond the limits of stove-plants, however, will the principle extend which we have sought to establish. It will hold good of all plants, that keeping the roots adequately warm is indispensable to their perfection. And a strong case in favour of thorough drainage, as well as of keeping the roots of greenhouse species, and of plants in the open border, within the influences of the sun, will thus be made out. Stagnant or superfluous water always entails additional coldness; and a great rule is frustrated thereby. We have not space to enter more largely into this subject, and can therefore only throw out these brief hints as a kind of indicator of the direction in which inquiry would be profitable.

To go back to stove-plants, we must state that the period at which we would recommend the application of bottom-heat is simply during the spring, summer, and early autumn. The temperature of a bark or other bed should be suffered to die away gradually in the autumn; and if the plants are left plunged in it through the winter, they will need scarcely any water. Perhaps it would be the wisest plan to take them out in the autumn, level the bed, and place them on the surface, with pieces of slate, stone, or brick beneath them.

There is yet a material, however, of which we have not yet spoken, and which may be applied advantageously as a means of providing bottom-heat in stoves. This is the leaves of trees; which, if collected towards the end of the winter, and placed in the pit of the house about the middle or end of February, will furnish an excellent heat for two or three months. This will also be a good mode of facilitating the decay of the leaves, in order to form leaf-soil. They must be well watered at the time of being introduced, and the pots should not be plunged in them at first, lest the heat prove too violent. When this has become more moderate, they may be slightly turned over, and the pots may be inserted to the rim in them, as in bark.

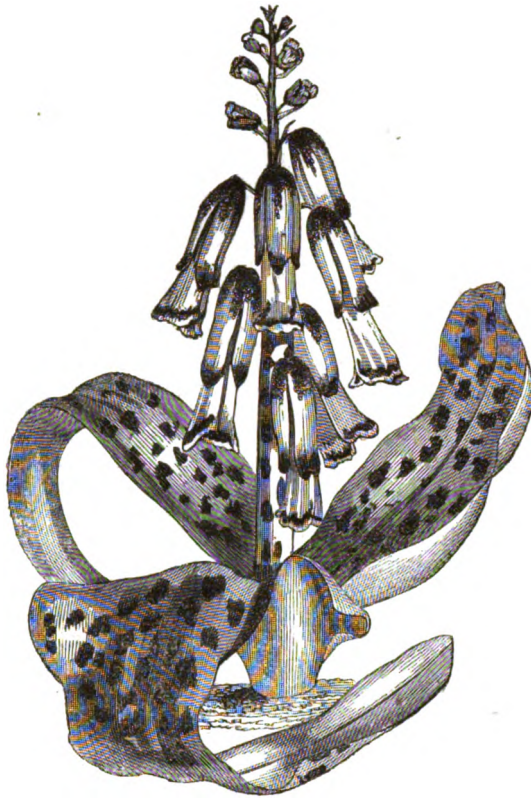
Should the use of either leaves or bark be considered unsightly in an ornamental house, their surface may be readily covered over with a thin layer of bark, in a state of almost thorough decay, or of leaf-mould, or any light soil. This need not be employed so extensively as to render its mixture with the heating material at all objectionable, when the latter has to be stirred or turned over.

In every instance where bottom-heat is supplied, it is most essential that it should never be allowed to become too strong, or to exceed the general temperature of the house. It is also indispensable that it be kept from getting into a dry burning condition, by frequent waterings on the surface. With leaves, especially, these states have to be vigilantly guarded against. Too powerful a temperature to the roots of plants would, when dry, have a highly prejudicial effect; and, if duly moist, the influence would be a kind of forcing, which is by no means to be desired, as it would entail general weakness and superfluity of growth.

It must likewise be a point in the cultivator's attention, that plants plunged in a heating material be not kept in pots of too small a description, or too long in the same place without examination; because, in consequence of the stimulus bottom-heat gives to the roots, these, if not duly furnished with room to extend themselves in the pots, will often grow through the aperture at the bottom, and extend themselves far into the bed. When they come to be removed from thence, the best supporters of the plant will, in such case, have to be entirely taken away; and, where the species is at all delicate, the specimen will be seriously thrown back.

Perhaps the simplest, easiest, and least questionable mode of giving bottom-heat to stove-plants in the summer, is by keeping them in pits or frames at that time, and filling up the houses with annuals and those other species which happen to be then in flower. It is at least certain that the trouble and expense of such a plan would be less, that the plants would be greatly advantaged by it, and that all houses seem most appropriately furnished during summer, when they are filled only with flowering objects.

If frames were selected for the purpose, the heat might best be derived from a dung-bed, made up like those for melons and cucumbers, and kept up to the required temperature by what are termed linings, after the heat of the bed itself had lessened. It is notorious how beautiful Gardenias and other plants flourish in a dung-heat; and there can be no doubt that most stove species would gain a verdure and healthiness in such circumstances, which are not to be obtained but by measures of this character.



LACHENALIA TRICOLOR.

ONE of a somewhat numerous tribe of bulbous rooted plants, introduced from the Cape of Good Hope in 1774, at which period there were the one now figured, *Tricolor*, *Luteola*, *Quadricola*, *Colorata*, and *Maculata*, all more or less brilliant red and yellow, and *Contaminata*, pink, imported, since which time many additions have been made to our English collections, which now boast of forty varieties, or thereabouts. The earliest, flowers in February, the latest in November. *Tricolor* blooms in April, and the whole of them do well in a greenhouse. The bulbs of several are imported in considerable quantities for forcing in early spring. The foliage of *Tricolor* is very pretty, blotched with light and dark green, and the plant, like most of the tribe, is very dwarf, and blooms well in pots of compost, half peat and half sand. They must have no water, except when growing. Among the varieties there is one purple and red, introduced from Persia in 1825. The varieties already known comprise *Anguinea*, *Angustifolia*,

Liliflora, and *Pusilla*, all white; *Fragrans*, *Hyacinthoides*, and *Patula*, white and red; *Glaucina*, *Orchioides*, and *Racemosa*, white and green; *Isopetula* and *Uniflora*, white and purple; *Bifolia* *Contaminata*, *Lucida*, *Nervosa*, *Rosea*, *Serutina*, and *Unicola*, all pink; *Mutabilis*, blue; *Violacea*, violet; *Punctata*, *Purpurea*, and *Purpureo Cœrulea*, purple; *Palida* and *P. minor*, pale blue; *Rubida* and *Sessiflora*, red; *Pustulata*, purple and green; the remainder are nearly, if not quite, all various modifications of red and yellow. The majority of them may be had at respectable nurseries, and all the principal London seed shops, where you may generally depend on blooming roots or bulbs. They form very pretty objects among the *Snow-drops*, *Crocusses*, *Narcissus*, early *Tulips*, and *Hyacinths*, and the bloom lasts a considerable time. There is no difficulty in forcing them in a common hot-bed, with any of the before-mentioned spring flowers.

THE FLORICULTURAL CRISIS.

THE necessity of making some effort to rouse the dormant energies of Florists would be at once apparent, if we could refer our readers back to the manner in which it was revived in 1832, and we doubt not, that were the means which were then so successful applied now, they would produce the same results. In 1832, the Floral Societies had fallen into decay, the more important had split into smaller ones, and these were found ineffectual. Seedling prizes were given for all kinds of new flowers, yet rarely were any good enough to be heard of again; there seemed no adequate advancement. A general rallying point was formed, round which the members of all others flocked, in the hope of reviving the science, and one great interest seemed to pervade all grades of Florists. The Metropolitan Society of Florists and Amateurs was the means of enrolling nearly two hundred active persons in the cause, and, had it not been for the unfortunate exclusion of two or three persons, who were blackballed (but who were not a jot worse than those who were admitted), and the consequent loss of the whole of their connections, there is every reason to believe, the number would have been doubled or trebled. But Societies are destined to rise and to fall, and one makes way for another. The Metropolitan Society had enrolled in their ranks men of all opinions and of all interests, who happened to indulge in Floriculture as a recreation, and were ambitious to shine as cultivators. There was an intercourse established between the dealer and the amateur, every way essential to the success of the science. The periodical meetings afforded the best opportunities of introducing flowers and plants, and discussing their faults and merits; men talked of what they had seen and heard of, and nothing tended more to excite emulation than their exhibitions for prizes. But this Society, like hundreds of its predecessors, was destined to experience a reverse. Men, like children, must change their toys. It is impossible to reconcile some people to the idea of being second in importance anywhere, and there are many who, if they fail to command in one Society, abandon it for another in which they can be of more consequence. It was the misfortune of the Metropolitan Society of Florists, that it disappointed the hopes of many persons who had raised new flowers, and discouraged the sale of all but those supposed to be worth adding to the best collections. Many a good man, who could not see with the same eyes, considered its decisions injurious to the trade of the Florist. Various were the causes, however, which assisted in bearing down the Metropolitan Society, but the principal one was the abandonment of it by the nurserymen, who felt the interference of its decisions with the —what they considered—rights of the trade.

The persons who most felt this were those who catered for the almost morbid appetite for novelty, and who had been reaping large advantages from their dealings. There must be, and will be, a limit to trade of all kinds, but the limit is comparatively narrow in those trades which depend on the luxuries or indulgences of life. The pressure of the times instantly affects the demand for all those things which we can do without. But there are other circumstances as well as a general depression that affects the trade in luxuries. If a man meet with repeated disappointments, he gets tired of buying, and, in the case of flowers and plants, if a cultivator spares no expense to procure the best of every thing, and believes he has purchased every thing of the best, he is grievously vexed at discovering that he has very inferior subjects for his money, and he is soon induced to abandon a fancy which involves him in so many disappointments. The Metropolitan Society was founded to promote the knowledge, practice, and general interests of Floriculture, and, as evils arose, they were provided against. Until the Society, or rather the particular section of the Society, which had taken the lead in its affairs, begun to interfere with the sale of flowers and plants of an inferior kind there was no indication of a decline among the members; but, when seedling varieties of plants were severely tested, and the judges' opinion pronounced, settled their real value, it was found that inferior things would no longer sell as they had sold previously. This change was properly attributed to the Society, and those who felt, what they considered the evil, discontinued supporting it. It may, however, be argued, that although the trade, or a portion of it, set their faces against the Society for the reasons we have mentioned, the Amateur buyers of Floral subjects could not do so upon the same ground. This is an erroneous conclusion. The amateurs and gentlemen's gardeners were great raisers of new things, and the trade, so long as a subject was really novel, no matter whether good or bad, purchased them at a price which answered the raiser's purpose; that measure of examining, and announcing the value of a novelty, and which demanded that such novelty should be good as well as new — that measure which checked the nurserymen's sale, shut up the market against every thing that had not some improvement to recommend it. Thus, not only the principal dealers left the Society, but the best amateurs, those who raised novelties, followed them, most of them joining a society which did not interfere with their trade, and which even to this time gives prizes to the best of the new subjects shown, whether they be good, or good for nothing. Thus was the Metropolitan Society limited to those few well wishers to horticulture, who had no novelties to sell, and who had determined that unless it were such subjects as really improved a collection, they

would never buy. In the mean time it was discovered that repeated disappointments so cooled the ardour of the thousands engaged in floriculture, that, not knowing from a dealer's description whether a thing was good or bad, and having no longer a society to point this out for them, they declined buying at all the first year, and the trade was worse than ever. This was felt most severely when a man possessed a really good novelty. The trade had so often described as splendid subjects the most worthless things imaginable, that a really good thing, if unknown, stood no more chance of selling than a bad one. This created a consternation among the dealers and raisers, and led to a consideration of what ought to be done. To go back to the Metropolitan Society would not do unless they could wrest the controul from the hands in which it still remained. A new society to accomplish that which they had left the other for doing, was proposed, and the dealers and the raisers of new flowers who had so repeatedly been deceived, and had deceived others, as individual dealers, actually formed themselves into a Board professing to test new flowers and plants, and report to the public upon the value of all novelties. This gave a momentary relief to the principal movers, inasmuch as the society very accommodatingly decided several of their productions to be first-rate. It is almost needless to say, that though there were not many who had faith in the society, the reports were remarkably favourable to the persons who established it, and the few who depended on them were as richly taken in, as ever they had been by a trade catalogue. The secretary was particularly fortunate in the decisions of the society; but there were persons who began to write against it, and the most respectable members who had joined it under an impression that it was a popular and desirable institution, fell away, until the founders were left to themselves.

There was mixed up with these society-transactions a good deal of party feeling, which even now pervades the whole trade, and is, we had nearly said, the ruin of it—it is, at all events, beyond measure injurious. There is a jealousy among nurserymen, a nasty envious feeling among exhibitors, a hostile spirit of opposition between the two newspapers, one of which is advertising for next to nothing to drive the other into low prices, while nobody thanks either for their pains or patriotism; nay, the very societies are conducted in the spirit of partisanship, utterly destructive of the interests they pretend to uphold. We have, in short, arrived at a crisis which must shortly bring about good or evil, and we seriously recommend those who are interested in floriculture to consider well what should be done, and so far as they can individually act to do it. There are certain things that must be done before floriculture can proceed as it ought. Periodical meetings should be held, at which it

should be perfectly understood, that gardeners, amateurs, nurserymen, and florists, should be equally invited to attend, without expense.

At this meeting every man should be at liberty to show flowers, plants, fruits, and other productions, for naming, or to make them known and collect the general opinion.

The chair should be taken by somebody conversant with the subject, and no questions but those connected with gardening, or the productions of a garden, should be permitted for an instant to be entertained.

Out of this one meeting would arise all the good that is wanted. In this one measure would be found the revival of the fancy, for a hundred good measures must follow as certainly as a ball will run down a hill. It would form a kind of floricultural parliament, whose session would never close.

ON COTTAGE GARDENS FOR THE POOR.

HORTICULTURAL pursuits have a direct tendency to elevate the character, and if the minds of the labouring community were elevated from their present (in many cases) wretchedly low state, the result would be one of national importance. But we will just pause for a short period, and consider these results in their twofold nature, as just mentioned. In most of our manufacturing districts, the workmen are kept, during their working hours, closely confined, which, I think, all will allow is exceedingly injurious to health; and, as recreation is indispensably necessary, which is also an undisputed fact, what an agreeable remedy may be found in the cultivation of a garden!

“A breath of unadulterated air,
The glimpse of a green pasture—how they cheer
The citizen, and brace his languid frame.”

It is true, these lines are intended to allude to the effect of country air on the *citizen*, and not of gardening on the operative, but they are very applicable to either case. Some will say, if that be the case, then walking in the country will have the same effect on a mechanic as cultivating his garden. I answer, not so: in most manufacturing districts, the body is constantly kept in one position, and by that means frequently becomes deformed, while, as the various exercises of gardening call all the muscles of the body into action, they have the desirable tendency of counteracting the evil. The influence of Horticulture on the minds of the labouring classes is so exceedingly clear as to need but very few remarks from me. That man who spends his leisure time in so innocent and beneficial a manner as gardening, instead of partaking in the debasing and immoral pleasures, so deplorably common among the working classes, will, of necessity, have his mind (that noble structure, in which alone consists man's superiority to every other created

being) in a state far more becoming an intelligent and responsible creature, than those who drown their mental faculties, and injure their bodily health, by the recreations before alluded to. It is needless for me here to say anything more than refer the reader to the concluding part of your excellent observations on Floricultural Exhibitions, No. V., p. 108. An intelligent modern writer thus expresses himself,—“If any pleasure can be called bright, beautiful, and lasting, it surely is a love of nature, *particularly of the green things that clothe the earth's surface*; the contemplation of them gives a tone of health and freshness to the mind, and *the cultivation of them vigour to the body*.” Now, if there is a class of persons needing a recreation productive of so much pleasure, it certainly is the labouring part of the community. I know not a more open field for the philanthropist than our manufacturing districts, neither am I aware of any plan by which so much rational pleasure can be created, as by extending Horticulture among the operatives. There is even yet another argument in favour of Cottage Gardening, and that a very forcible one viz., its extreme utility to the man with a family. I anticipate an objection that may be made, and that is, that few operatives have sufficient time to cultivate a garden, even if they could meet with one. But I reply, “Where there's a will there's a way :” It is really surprising to see what may be done by the devotion of only one hour per day, (a period that may in most cases be spared), or even by children under twelve years of age. By means of not a very large garden, a man may obtain sufficient culinary vegetables for a moderately large family, and even have some to dispose of in other ways,—(he may also, by devoting a border to the growth of a few fragrant flowers, as wall-flowers, roses, &c., keep bees, which may be superintended by the female of the house, and are, when well managed, a profitable source),—besides having his vegetables much fresher and better than he could always procure, if he had to purchase them in the markets. The difficulty, in large towns, of obtaining cottages with suitable gardens attached is an obstacle rearing itself like a huge mountain, which must be removed before gardening can be carried to the extent desirable among the working classes. I confess my inadequacy to devise a remedy, and should any reader of these pages be able to project one, I hope he will feel the importance of the subject, and lose no time in suggesting it publicly.

In small towns and country places, this objection may be remedied, by what is called the “allotment system,” respecting which, I beg to subjoin the following quotation from Mr. Rennie's Hand-book of Gardening. “Within a very brief period of time, public attention has been strongly directed to bettering the condition

of our peasantry, in consequence, partly, to their wants (real in many cases, imaginary in others), having driven them to commit extensive depredations, and in numerous ways to become formidably troublesome. This public attention has given an almost simultaneous rise in England to the system of allotting, on a moderate rent, from one-fourth to half an acre of land to an individual labourer, willing to cultivate the same at his own charge, and in Scotland, where the peasantry are of a greatly different character, to the proposal of a regular system of instruction in gardening. Wherever the allotment has been fairly tried in England, it has succeeded even beyond the most sanguine anticipations of its advocates, and may,—at least, it should,—lead to the adoption of the instruction system of Scotland; for a man might as well attempt to make a watch, as to grow either farm or garden crops, without a considerable knowledge of the subject.” It is my firm conviction, that if kitchen gardening were to form a branch of education in our National Schools, the result would be very beneficial. “A garden might be connected with every parish school, that the pupils may employ themselves upon it, at once as an agreeable recreation, and as a piece of training highly necessary for the most of our rustic population.” Few indeed are the children who would not feel a pleasure in such an exercise; and a love of gardening, felt and cherished when children, would be a considerable acquisition to our working classes in after life. Before concluding, I must, however, be pardoned for making another extract from Mr. Rennie's work :—“Surely nothing could be more desirable than to see the gardens of our cottagers and tradesman throughout the land neatly laid out, skilfully cultivated, yielding useful produce, and, at the same time, tending to improve the national taste, and elevate the national feeling, by means of the cheap luxuries of flowers and fruits. When I was in Switzerland, in the summer of 1832, nothing surprised me more, particularly in Berne, and other Protestant Cantons, than the extraordinary neatness of the gardens attached to cottages and farm houses, far surpassing in this respect anything I had ever seen in Holland and Belgium, much less in England. Scotland, I am sorry to say, is, with a few rare exceptions, around Paisley and other manufacturing districts, quite out of the question, being in this respect little better than Ireland or France. As the neatness of gardens is always one sure test of the industry and comfort of the owners, leaving elegance of taste out of consideration, much of what is observable in Switzerland may be ascribed to this cause, arising in part from the self-importance produced by independence. It may, however, be also inscribed in part to education, instruction in gardening and agriculture being a prominent branch in most of the Swiss schools as well as in

Prussia and Wirtemberg. Gardening is one of the important subjects of education, which could not be taught by any course of lectures, how able soever they might be; but the experience of the Swiss proves that it could effectually be taught in schools."

LIQUID MANURE.

WE have heard a great deal of the value of this application of late years, and certainly coincide with those who recommend the hoarding up of every particle of every substance, liquid or solid, which can be converted into vegetable food; but though the drainage of the mixens and dunghills (for such is usually styled *liquid manure*) may be extremely useful, it should be understood that it cannot become a substitute for the solid matters (or *spit dung*), which remain after the fermentation of the heap, since it contains all the saline and soluble materials that are washed from those matters; and therefore differs much from them in the chemical arrangement of its constituents.

However, before I proceed to particulars on this head, it will be desirable to refer to two papers which appeared some years since in the *Horticultural Register*. One on the advantages of using *cow-wash*, and the other on *liquid manure*; by Mr. Stafford, of Willerstepy. In the former there is the following remark:—"I am satisfied, if the farmers in this country were to have a barrel sunk in one corner of their cow houses, and the wash drained into it, and with a water cart, or other means, apply it to their land in moist weather, they would find their labour would not be lost."

Mr. Stafford stated that his practice originated in a former dispute about manure (a circumstance too common in large establishments), which induced him to economise the fluid that had drained away and was lost:—"I at once put down a pump which supplied me with liquid manure from a dung yard, in which not less than thirty head of cattle were kept: I set it down as a standing rule, that this was always to be attended to in the autumn and winter months. This had not been practised more than twelve months before I found myself independent with respect to manure." * * * "Winter is, without exception, the best time to apply it to advantage; and although it has been doubted whether its fertilising properties are not carried off by heavy rains, I am confident that this is not the case: upon the principle of filtration we may rest on this point. I have often been sorry to see farmers' teams driving up and down the country for lime to apply to old tilled land, and at the same time this liquid manure was running to waste, and was called a nuisance."

If the economising of the fluid from cow houses and farm yards be an object, there is no

recipient of the drainage so effectual as the cemented tank. Nothing could be more easy than to construct drains by which the fluids might be conducted to the tank, and when once deposited within that water-tight underground vehicle, not a particle would be lost either by leakage or evaporation. Decomposition, also, would proceed therein very slowly, inasmuch as the agency of light, and air, and frost, must be comparatively precluded. A pump of ordinary structure could be put down at a trifling expense, but with the precaution of not sinking the feeding pipe too low, because a sediment will naturally be deposited at the bottom of the tank which would clog the action of the pump. This matter ought to be taken out occasionally; and being mixed with soil and lime it would form a most rich compost for cabbages, and all the *brassicas*.

In respect to solid and liquid manures, the differences between them is very considerable. The solid, reduced substances of the dunghill, contain that peculiar product of vegetable and animal fermentation, now called humus—which chemically may be considered an hydro-carbonous oxide—the pabulum of vegetative life; but in the reduced mass of the dunghill is found, mixed with portions of semi-decomposed vegetable remains of alumen, chalk, sand, and iron. This mass is the best and most perfect manure for the farm and garden; and, when worked in the land by the plough or spade, and subjected to the stimuli of living vegetation, is converted into nutritive aliment and earth.

Liquid Manure contains much of those energetic saline matters, ammonia-potassia and soda, chemically united with muriatic and acetic acid. It should, therefore, be applied with caution, and largely diluted. If suffered to remain for some months in the tank, and sprinkled in February over grass-land by a machine similar to that used for watering roads—especially if a small proportion of soot be mixed with the liquor, or be previously sown over the turf—the most beneficial effects may be expected. If used fresh, it will be prudent to saturate a body of earthy sods with it. In a few months, after turning the heap once or twice, a fund of valuable manure, for either field or garden, will be formed. I never yet could satisfy myself that liquid urinous manures, applied *as such*, ever did good to growing vegetables: as a wash over fallows, or plots out of crops it may prove extremely serviceable; but it ought never to be considered a substitute for *manuring*; for such it can never prove. Before the diffusion of chemical science, muriate of ammonia (*sal ammoniac* was prepared from the urine of the camel), I perfectly recollect the huge conical masses of Egyptian sal ammoniac which formerly were imported. Subsequently, during the late war, that chemical salt was manufactured in large quantities from the fluids collected in the

French prisons. In Bristol, smelling-salts were thus prepared to a considerable extent. Now, in this period of refined, economic science, the refuse of the gas works is made use of for a similar purpose; and therefore, *that* which was sold at three shillings per pound thirty years ago, can now be purchased at *ninence*, and even of superior quality. The lime refuse of the gas works becomes an excellent liquid manure; and, as it contains also much sulphur, in a state of solution, might be extremely efficacious in driving away destructive insects. Every day, and every fact, should instruct the farmer, and make him sensible of the advantages to be derived from science. Heretofore he has despised and rejected his best friend and most kindly coadjutor; the day it is to be hoped, approaches, when, with the extension of agricultural societies (not political bodies in disguise), a knowledge of principles will be sought for, and the means of philosophical education duly provided.

A.

WEEKLY JOURNAL OF GARDENING.

Sow some of the Botany Bay Plant seeds as soon as you gather them: sow them almost without any covering, and lay over the top some loose moss, which may be kept damp.

DAHLIAS in small pots should be shifted into those of a size larger at least; for though not wanted to bloom, the root will be a better size for storing.

Look well after the EARWIGS, and do not forget to stir the surface of the earth a little near the root, for it is a favourite hiding-place.

We presume to guess that there will now be some hot dry weather, and our gardening friends had better be prepared.

Tie loosely some moss over all newly-budded trees and shrubs, if exposed to the air and sun.

Litter may be spread over the ground occupied by Dahlias, previous to which the earth should be forked and well broken, except just among the roots.

PLANT OUT Ten-week Stocks, and other Annuals, for the latest blooms.

PROPAGATE all the best Dahlias, and such Seedlings of this season as appear highly promising.

TAKE UP all bulbous roots whose leaves have died down.

CLIP hedges and box-edgings not already done.

PLANT OUT Broccoli, Brussels sprouts, &c.

Sow Cabbages and Cauliflowers in open situations; cover with a mat during the heat of the sun, and water when necessary.

TAKE UP Ranunculus and Anemones, and store them.

LOOK OVER the Tulips taken up, and clean

them of all loose or rotten skins previous to putting them by for the winter.

August 12, 1843.

INDIAN CORN.—ZEA MAYS.

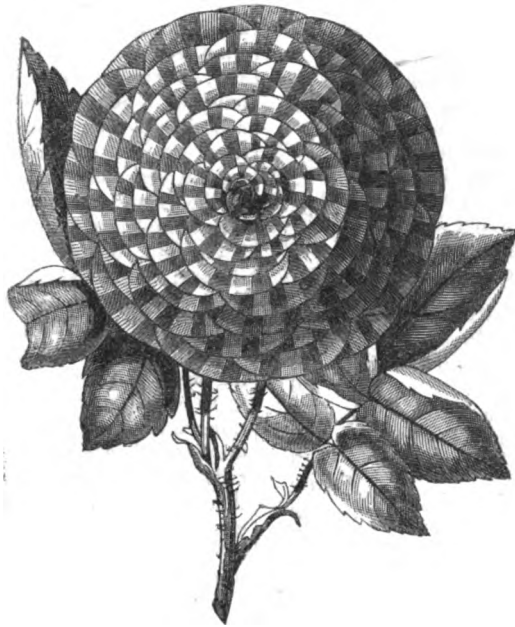
MR. COBBETT committed the great error of endeavouring to prove too much: he did the world good service by introducing that hardy dwarf variety which took the title of "Cobbett's Corn;" but, by asserting that it could be rendered an agricultural crop, he caused a number of experiments in the field to be instituted in the large way, which, in the compass of a season or two, baffled all his endeavours, evinced the fallacy of his views, and chased his corn, not only from the field, but almost from the memory of the cultivator.

Now really, this is to be lamented; because, there does not exist, perhaps, in nature, a vegetable of greater beauty or excellence, take it for all in all. It is, *in the garden*, a plant of extremely easy culture, growing with great luxuriance, exhibiting an intensity of verdure which is without rival; yielding abundance of fruit, that, when plucked at a proper age, is a most delicious table vegetable in the estimation of many, and when left to ripen, which it will do, perfectly, in ordinary summers, produces a grain that poultry doat upon, select in preference to every other, and thrive with in proportion to the eagerness with which they devour it.

Field culture, in the abstract, is disclaimed; but, a gentleman, near Maidenhead, grew three or four acres of Cobbett's corn, from seed ripened in England, about the year 1833, upon the produce of which he fattened about forty turkeys, all his great flock of fowls and chickens, and many pigs; his servants observing, that they never ate pork of finer flavour and condition.

Early in May is a good season for sowing the seed: the preparation of the soil for which, is the following:—select a spot of light, friable loam, open to the full sun; set out and dig a set of trenches, pointing north and south, one yard asunder, one foot deep, and one foot wide: put into each a six inch layer of reduced manure, return the earth over *that*, incorporate with it a little light, vegetable or leaf mould, if at hand, and then leave the plot to settle for a few days, observing to mark out the centres of each trench, by a stick, at both ends. In some sunny day, draw a drill along the middle, two inches deep; and when the sun shall have made the drill and earth quite warm and friable, dot the seeds along a line, three inches apart; sprinkle over them air-slaked lime, mixed with one-sixth of coal soot, and draw the loose soil into the drill, flattening it firmly, but not to a hard surface.

Encyclopædia of Flowers.



A TREATISE ON THE CULTURE AND MANAGEMENT OF THE ROSE.

BY GEORGE OLENNY, F.H.S.

IF any flower engages, or should engage, the universal affection of the English, surely it is their own emblem, the Rose; but apart from all national considerations it has extraordinary claims on us for its numerous and excellent properties. From the old cabbage Rose, which is familiar to every cottager, to the bright yellow briar, which to many is still a novelty, its thousand gradations, comprising almost all shades, from black to white, from deep crimson to pale pink, from the size of a small plate to that of a buttercup, and from that stage of doubleness which renders arrangement of the petals impossible, to the wild dog Rose in the edges,—every variety has its charms, and it is possible to select, probably, finer and more extensive collections of Roses than of any other garden flower. We have heard it said that Messrs. Loddiges, of Hackney, enumerated fifteen hundred varieties many years since, but if there were any thing like that number twenty years ago, there must be treble that number now. Mr. Rivers, gives a catalogue, which he prefaces by saying, “owing to the great increase in the number of varieties of Roses it has now become impossible to include the whole collection cultivated here in a catalogue, so as to come within the limits of the two-penny post, &c.” Yet in this very catalogue, which contains only a selection, supposed

to be, or at least offered as, varieties fit for cultivation, there are more than a thousand mentioned, and nearly all described. Mr. Rivers has divided them into distinct families, of the merits of which divisions we shall, perhaps, have something to say hereafter; but the divisions are thus introduced. Under the head of “Summer Roses.” We have of

| | |
|--|-----|
| PROVENCE ROSES, <i>Rosa centifolia</i> | 25 |
| DWARF PROVENCE | 6 |
| MOSS ROSES, <i>Rosa centifolia muscosa</i> | 45 |
| FRENCH ROSES, <i>Rosa Gallica</i> | |
| 1st division, self-coloured and shaded | 147 |
| 2nd division, variegated | 47 |

Then we have

| | |
|--|-----|
| HYBRID PROVENCE ROSES | 54 |
| HYBRID CHINESE ROSES | 128 |
| HYBRID BOURBON ROSES | 31 |
| ROSA ALBA | 27 |
| DAMASK ROSES, <i>Rosa Damascena</i> | 40 |
| SWEET BRIARS, <i>Rosa rubiginosa</i> | 12 |
| HYBRID SWEET BRIARS | 3 |
| AUSTRIAN BRIARS, <i>Rosa lutea</i> | 10 |
| DOUBLE YELLOW ROSES, <i>Rosa sulphurea</i> | 2 |
| AYRSHIRE ROSES, <i>Rosa arvensis</i> | 9 |

ROSA MULTIFLORA.

| | |
|---|----|
| 1st division, small flowers and leaves | 5 |
| 2nd division, large ditto ditto | 9 |
| EVERGREEN ROSES, <i>Rosa sempervirens</i> | 18 |
| BOUSALT ROSES, <i>Rosa Alpina</i> | 6 |
| BANKSIAN ROSES, <i>Rosa Banksie</i> | 9 |
| HYBRID CLIMBING ROSES | 8 |

The next which came under notice in this catalogue are the AUTUMNAL ROSES, from which we infer, that we are to consider all the preceding belong to the summer Roses, there being no regular general distinction between them. Under the head of Autumnal Roses we have

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|---|----|
| DAMASK PERPETUAL ROSES | 40 |
| HYBRID PERPETUAL ROSES | 43 |
| PERPETUAL ROSES of varied origin | 3 |
| BOURBON ROSES | 80 |
| CHINESE ROSES, <i>Rosa Indica</i> | 67 |
| TEA SCENTED CHINESE ROSES | 92 |
| MINIATURE CHINA ROSES | 9 |
| NOISETTE ROSES | 62 |
| MUSK ROSES | 9 |
| ROSA MICROPHYLLA | 7 |
| MACARTNEY ROSES | 5 |
| ROSA BERBERIFOLIA | 1 |

We have mentioned Mr. Rivers' catalogue because it is the first that came to hand, and the divisions into families which have certain distinctions—families from which he professes to have selected the Roses—renders it better adapted, perhaps, for our object—that of showing the enormous quantity of varieties which there must be in circulation. In this article we propose to give a brief description of the principal great divisions of the Rose family, a descriptive list of a few of the best or newest, a familiar series of directions for their culture and management, budding, grafting, layering, and raising from cuttings, pruning, blooming for the best appearance in the garden, and flowering them for exhibition, cultivation in pots, on walls, poles, trellises, and fancy designs, saving seed, preserving it, sowing it, and the cultivation of the seedlings, the selection of good varieties, a notice of properties which are to be most esteemed, and a general notice of the best natural soils and situations.

DIVISION OF ROSES INTO FAMILIES.

We did not certainly intend to subdivide the Roses, at present in cultivation, into so many distinctions as Mr. Rivers has done, as we are quite prepared to find very slight differences between many which are nevertheless separated. Second, the smooth-wooded kinds, which bloom at various seasons. Lastly the Autumnal Roses. Most of the distinctions, however, speak for themselves, and we must, for the sake of buyers, keep our distinctions as near as possible like

those in the principal catalogues. We commence then with the

PROVENCE ROSES, *Rosa centifolia*.

Probably there is no style of Rose better adapted for exhibition than the Provence; its chief recommendation is its extreme doubleness, and, whether shown as single blooms or in bunches of buds and blossoms, in all stages, few will fill up their places better. Of this family there are some approved old sorts, but of the present year's catalogues the twelve best adapted to the young amateur, taking price and quality into consideration, are:—1. Alphonse Maille; 2. Cristata; 3. Curled; 4. De Rennes; 5. Duchesne; 6. Rachel; 7. Riene de Provence; 8. Rochebardon; 9. Spotted; 10. Sylvain; 11. Triomphe d'Abbeville; and, 12. Unique. These ought to be had for 1s. to 1s. 6d. each, by taking the dozen, and would be an excellent assortment of that particular family. There is nothing among the Dwarf Provence that we should think worth a separate notice; they are generally dwarf and early, and this may recommend them to some, but, except a novelty that is mentioned, Pomponne de Bourgogne, said to be a White Rose with a pink centre, and at a large price, we should not have mentioned the class. The next division is the

MOSS ROSES, *Rosa centifolia muscosa*.

Of these few the best is the old favourite, which is almost like the Cabbage Rose, with mossy stems and calyx. As this family is, however, universally a favourite, and every distinct variety seems admired as a wonder, we shall mention a few which may be procured reasonably, and be worth cultivation:—1. Blush; 2. Celina; 3. De Veillard; 4. French Crimson; 5. Lancel; 6. Lansezeur; 7. Moussue partout; 8. Moussue presque partout; 9. Prolifère; 10. Prolific; 11. Unique de Provence; 12. White Bath. Among this family there are too many which have not a single recommendation, and others which, although good in themselves, are so like those already in cultivation, as not to be worth adding. Several new ones are coming out in France next season, but it would be very imprudent for any but enthusiasts and dealers to buy them unseen.

FRENCH ROSES, *Rosa Gallica*.

This family is divided by Mr. Rivers into two classes—the one consisting of self-coloured and shaded flowers, the other of variegated, or party-coloured flowers, variously blotched, striped, or mottled. The original kinds are said to grow wild in the French and Italian hedges; so extensive, however, is the list of varieties comprised in this family now, that Mr. Rivers' catalogue of selected kinds contains nearly two hundred. It will be seen, therefore, that it is no small task to venture upon recommending a

few. Mr. Rivers has in his *Rose Amateur's Guide* attempted this, and for those who want very large collections he has done it admirably, but to give some idea of the extent to which his recommendations go, he selects upwards of sixty varieties from this family alone, whereas, we must confine ours to twenty-four, that is to say, twelve self and shaded, and twelve variegated. We shall not pretend they are the best, but they are the varieties we should purchase for ourselves if we could only manage that number. We should select for the selfs, *Beaute Parfait*, *Agnodice*, *Idalise*, *Madame Damareau*, *Phedre*, *Pivoine du Roy*, *Violet*, *Cremer*, *Wellington*, *Romulus*, *Orpheline de Juliet*, *Aglæe Dusart*, and *Cyntic*. For the variegated kinds we should take, *A Fleur a Feuilles Marbre*, *Bizarre Marbre*, *Juanita*, *La Nationale*, *Panache Pleine*, *Œillet Parfait*, *Triomphe de Beaute*, *Aglæe Adanson*, *Andre Thouin*, *Modeste Guerin*, *Duc de Orleans*, and *Village Maid*.* We do not say there are no better, but these are the varieties on which we should rely if we were about to exhibit, and if they are well grown, the bloom can hardly fail to give all that is required—fullness, variety, and contrast. The next family we touch upon is the

HYBRID PROVENCE ROSES,

said to be produced by a cross between the French and Provence Roses, and exhibiting great variety and beauty. From this we select a dozen, as good as we can find, with due regard to the necessity of having them distinct: *Duc d'Angouleme*, *Illustre Beaute*, *L'Admiration*, *L'Ingenue*, *Reine des Belges*, *Agnes Sorel*, *Enchanteresse*, *La Volupte*, *Blanchefleur*, *Duchesse d'Angouleme*, *Mrs. Rivers*, and *Semilasso*. We have paid no attention here to the season of blooming, as, with the collection we recommend, there will be some in flower nearly all the year; and, were it not for the convenience of referring to the catalogue, we should not have made so many divisions. Our next family is one of the most varied and most interesting of the whole tribe.

THE HYBRID CHINESE ROSES.

"They give," says a celebrated cultivator, "all that is or can be beautiful in Roses." It is said they owe their origin to the China Tea-scented *Noisette* and *Bourbon* Roses, fertilized with the French, Provence, and other summer Roses. This, however, is merely assumed. Nature has done a good deal for the Rose, which, notwithstanding the numerous varieties with which we are supplied, owes less to any regular system of artificial fertilization than most flowers, though it does owe something; and, among the Roses thus classed, there is more real difference of character than there is between one family and another. From this we shall select a dozen, beginning with one that is

larger than any of our garden Roses, and has all the characteristics. We mean *Brennus*, one of the most rapid growers of the tribe, making shoots occasionally ten feet in a season, for which reason it may be called a climbing Rose; although it was introduced by Mr. Calvert from France as a standard. George the Fourth, raised by Rivers of Sawbridgeworth, is another of those hybrids which seem in most respects like the ordinary garden Rose. To these two we would add the Duke of Devonshire, *Lady Stewart*, *Marjolin*, *Becquet*, *Victor Hugo*, *Petit Pierre*, *Chenedole*, *Comtesse de Lacpede*, *Hypocrate*, *Grilony*, *La Grandeur*, and *Madame Plantier*. In these there is great variety of character and colour, and enough for any moderate amateur, for we have other families to visit. The next under notice are what Mr. Rivers calls

HYBRID BOURBON ROSES.

A family taken as it were from those we have just done with, the hybrid Chinese Roses. They are represented to have thick petals, which makes them able to endure the weather better, and they retain their thick glossy foliage till very late in the autumn. These are not separated in the *Rose Amateur's Guide*, so that the separation at all, seems to have been the result of an after-thought. However, we select half a dozen very distinct varieties:—*Sylvain*, *Richelieu*, *Paul Perras*, *Lady Montgomery*, *Colonel Combes*, *Belle de St. Cyr*, and leave this family, simply observing that they are well adapted for standards. We now come to

ROSA ALBA.

If this mean any thing, it means the white Rose; yet, among the numerous varieties which go under this name, we find Roses of all colours, and some of our very best. We are told the family is called *Rosa Alba*, because *Rosa Alba* was the parent of all of them, that is to say, the assumed original species was white, and was introduced from middle Europe in 1597. We have already hinted that we have a great many more species (so called) than we ought to have, and that one half the assumed species are but varieties. However, under the name of *Rosa Alba* we have red, purple, lilac, crimson, and rose, and the continuance of so many varieties under such a head presents us with a series of names something like enumerating the red white Rose, the purple white Rose, and so on. We shall take the liberty of pointing out a few that may be grown with advantage. We will take *Achille*, *Fanny Sommerson*, *La Seduisante*, *Princess de Lamballe*, *Queen of Denmark*, and *Felicite*; and whoever tries them will find only one white amongst them.

DAMASK ROSES.

Here we have quite as great a variety, and

* The subject of the cut at the head.

by way of paying off the family of White Roses for changing from white to damask, we have Damask Roses turned white. The original species was, we are told, single, and the same may be said of all other Roses, if not of all double flowers. Probably it would be difficult to find half-a-dozen varieties better adapted for the amateur than Bachelier, Coralie, La Ville, de Bruxelles, Lady Fitzgerald, Madame Hardy, and the Painted Damask. We come next to

SWEET BRIARS,

of which there are many varieties, but they will not do for showing, and, except for the scent, which is best in the common one, or for seed, nobody would think of growing them. Hybrid Sweet Briars, of which there are a few, afford us two worth growing—Double Margined Hip and Riego. They afford proof that the varieties of the Briar are very wonderfully improved as well as increased.

THE AUSTRIAN BRIARS

afford great temptation to select a few varieties, such as the Copper Austria, Double Blush, Harrisonii, and Persian Yellow. These grown, with the two already mentioned, will make a very pretty variety as standards or dwarfs.

THE DOUBLE YELLOW ROSE, *Rosa sulphurea*.

Few people can bloom the very beautiful variety called the Yellow Cabbage Rose. Those who contrive to get them in bud, can rarely coax them to open, yet, in some situations it blooms spontaneous, and, therefore, every body should have a plant and give it a chance. Where we have seen small plants succeed best, has been where they have been undisturbed for years, and against a wall. We have had it bloom when budded on a very old China Rose, growing on the front of a house. The bud grew strongly; we cut away all the tree but the branches on which it was budded, and constantly rubbed off and cut away every morsel of the China, as it kept making vigorous efforts to shoot. The China Rose had probably been in the same place fifteen years.

CLIMBING ROSES.

The first division of this family is the Ayrshire Rose, most of the varieties of which make exceedingly long shoots, bloom freely, and are admirably adapted to cover a house front, high wall, or lofty design. There are many varieties, but the most useful and desirable to the ordinary grower are,—The Queen of the Belgians, pure white; Dundee Rambler, white, edged with pink; and, Ayrshire Queen, purple crimson. These, for tall standards, to grow over ornamental devices, or form drooping heads, to cover pillars or arches, are very pretty, but the dark one is only semi-double. The next division of climbers is

ROSA MULTIFLORA,

said to be a native of Japan. Some of the varieties having large flowers and foliage, and others small. Of the former, the most perfect are Grevillei, Minor, and Russelliana; and of the latter Alba and Rubra.

EVERGREEN ROSES.

Of these we should select Adelaide d'Orleans, Felicite Perpetuelle, Banksiaeflora, Donna Maria, and Myrianthes. All of them admirably calculated for growing on poles, old stumps of trees, arbours, arches, or designs of any kind.

BANKSIAN ROSES.

This beautiful and unique family has but few varieties, but the two principal ones, according to our fancy, are the yellow Banksian and white Banksian, with small flowers, and many of them. These are pretty for high walls and fronts of houses. There are others much esteemed by some growers who delight in large collections, but we should not travel far for more than Ode-ratissima, which is said to possess an odour like the orange flower, and Jaune Serin, which is a bright yellow, so that our collection in this family would amount to two white and two yellow; and among the

HYBRID CLIMBING ROSES,

Which come next, we take the garland Rose, which will give four or five hundred flowers on a head of bloom, of a creamy white colour, and not larger than a shilling, and a Astrolabe brilliant Rose, very double. With these we dismiss the great division of what are called summer Roses, simply because they bloom in summer time, and proceed to what are called autumnal Roses, beginning with

THE DAMASK PERPETUAL ROSES.

Of these we select six which we should grow, viz., Antinous, Bernard, Crimson Perpetual, Flon, Preval, and six Juin. The Crimson Perpetual is familiar to almost every grower as "Lee's Crimson Perpetual," and is deservedly, a favourite, and the fact of these blooming in autumn, when almost every thing else is done flowering, renders this family very interesting, but it is so numerous, that after possessing the six we have mentioned, cultivators ought to see novelty before they buy it. Among

THE HYBRID PERPETUAL ROSES.

There are several well worth notice, beginning with Aubernon. We think we can name six likely to give an amateur satisfaction. Say we add Aurungzebe, Calliope, Duchess of Sutherland (Laffay), Prince Albert, and Prudence Ræser. Prince Albert being a very general favourite, and one in which Dr. Lindley fancied he saw a great similarity to something else. This family blooms from June till the frost stops

hem, and are a great acquisition to a garden. The next section presents us with

PERPETUAL ROSES OF VARIED ORIGIN,

And the three mentioned in the catalogue are *La Miniature*, *Perpetual Scotch*, and *Stanwell Perpetual*, which may be had or omitted, being more curious than beautiful.

THE BOURBON ROSES

Come in larger quantities, even in selected catalogues than are rightly advertised by name. Of these it is proposed to take twelve, viz., *Acidalie*, *Anne Beluze*, *Ceres*, *Crimson Globe*, *Crimson Madame Desprez*, *Emile Courtier*, *Lilacea Grandiflora*, *Madame Margat*, *Madame Nerard*, *Queen*, *Reine de Congres*, *Themocles*. These are all beautiful Roses, blooming late, and adding grace and fragrance to the garden as other flowers are becoming scarce. We now come to the

CHINESE ROSES,

which, at a comparatively recent period, boasted but few varieties, but are now a most extensive class, and extremely delicate. Of these take *Alcine*, *Archduke Charles*, *Carmin Superbe*, *Countesse de Molore*, *Cramoisie Superieure*, *Desfontaines Fabvier*, *Jenny Colon*, *Madame Bureau*, *Mieliez*, *Napoleon*, and *Sulphurea Superba*; these being very distinct varieties and free growers. From these we proceed to the

TEA-SCENTED CHINESE ROSES.

These include several remarkably tinted varieties, particularly among the lemon, fawn, and cream colours. The following selection of a dozen will be found well worth attention:—*Belle Alamande*, *Comte de Paris*, *Devoniensis*, *Eliza Sauvage*, *Fragoletta*, *Gigantesque*, *Nina*, *Pactolus*, *Safrano*, *Smith's Yellow Noisette*, *Triomphe du Luxunburg*, and *Yellow China*. We were going to observe that all these China and Tea-Scented would grow well in pots and force, but as we have elsewhere shown that there are none that cannot be forced or grown in pots, it would be idle to make any other distinction than that they are less difficult to novices than some others. The next family of importance are the

NOISETTE ROSES.

These are, for the most part, Roses which flower in bunches, and, except in pots, are not desirable to show at exhibitions. They form showy standards, because their bloom is generally abundant, and a diversity of colours is one aim in selecting them, though many of them which are most fragrant, hover between white and yellow, and are tinged with rose or fawn colours on the edges or in the centre. We take for choice,—*Boulogne*, *Camellia Rose*, *Clara Wendel*, *Comtesse de Tolosan*, *Edmund Garrat*,

Elizabeth, *Jaune Desprez*, *Juliet*, *Lemarque*, *Lemarque a Cœur Rose*, *Madam Jouvaine*, and *Solfatare*. These will be found to be free growers, and very showy in bloom.

MUSK ROSES.

This is another small family, containing a very few varieties, and of these few not half good. We apply this term to those which are not double, and which have nothing in their habit or fragrance to make up for the deficiency. We recommend *Rivers' musk* and *Ranunculus*, and we have done with them. Some, it is true, are as good as climbing Roses for pillars, but there is abundance of better in other families.

ROSA MICROPHILA

Will supply two or three curious varieties, as *Rivers' Grandiflora*, *Verdier*, and *Rubra*.

MACARTNEY ROSES

Afford us the beautiful *Maria Leonida*, and scarlet *Maria Leonida*; and in

ROSA BERBEREFOLIA

We have *Hardii*, a bright yellow, with a crimson centre, but being single it can be only useful for seeding, or a showy variety in a collection.

BOURSALT ROSES

Are not favourites of ours; they are large and rambling for the most part, and not very double. They are not unfrequently used as stocks to bud or graft other Roses upon, which, however, is the case with many vigorous growing kinds that will do for Chinese varieties.

MINIATURE CHINA ROSES.

These are pretty for borders and pots. The four or five colours will be found in *Blush*, *Caprice des Dames*, *Dieu-donne*, *Gloire*, and *Jenny*.

GENERAL CULTURE.

Generally speaking, all the kinds of Roses will grow in ordinary kitchen garden mould, but they thrive much better in rich stiff soil, so much so, that we have known loads of the turf from a meadow brought into a garden to make a Rose clump, and seen the Roses thrive so differently in that to the manner they grew in the ordinary borders, as to make Roses of the same kinds look totally different varieties. The doubleness of some Roses is very much affected by bad soil. We consider the very best soil for the Rose out of doors to be rotted turfs from a meadow of stiff loam. They do not succeed so well in light soils, nor do they progress at all unless there be some richness in the ground. For all ordinary purposes of ornament, where the borders are already formed, the best thing that can be done is to dig out the holes, mix in

them some good loam and well decomposed dung, and plant them in it. Whether you are planting standards round the ground, or in a plantation, or dwarfs in the borders, the advantage of a fresh mixture of loam and dung will be obvious in the first season's growth. If standards, you must drive a stake down to make it fast to, that the wind may not dislodge it from its position. The root ought not to be deeper in the ground than to just cover the crown of it, but where people have been arranging the heights of standards for the sake of uniformity, they have been very apt at sinking any which happened to be taller than they liked, until they brought the heads just where they were required, to the great damage, and, in some cases, death of the stock. In all planting, therefore, out of doors the root should go no deeper than is necessary. As all Roses, as well as other nursery plants, are more or less injured in the root by taking up, care must be taken to cut all ragged parts of the root clean, and to trim any very rambling portions within moderate dimensions before they are planted. They will require nothing more than watering in dry weather till pruning time. For pillars of Roses and devices observe the same rules, whether the Roses are on their own roots, or budded, or grafted on stocks. Trim the roots clean and plant them in good loam and dung close to the poles, devices, or other subjects they have to cover.

PRUNING THE ROSE.

One of the most difficult things to impress upon the mind of the amateur, is the necessity of pruning some Roses very close. Suppose they are cut in ever so much, every bud will make a branch, and bloom, if grown properly. Eight or half a dozen short branches, with one or two eyes each, will make a handsome head, and, by the same rule, if a Dwarf Rose be cut within two eyes of the ground, it will shoot the stronger for it. We have so recently given instructions as to pruning the Rose, in our Treatise on Growing Roses in Pots, that some of our remarks would appear the same thing over again, but, upon the whole, there may be much more liberty taken with plants in the open ground than there can with those in pots, and, therefore, we say very little. There are many sorts of Roses in the open ground—all the garden rough barked sort—that would make, if growing healthy, a shoot of three to four feet; therefore, suppose we receive a plant with only a single stem from the root, being a layer of the previous year; or suppose we have it on a standard only one branch from the bud, which is always stronger and better than if there are two or three; the first season we should cut that to within two eyes of the ground, if a Rose on its own root, or within two eyes of the stock if it be a budded one. These two eyes would, the very first year, send out two blooming branches, which would grow a con-

siderable length. The next season we should cut both of these in to within two eyes of the short branch they started from, and this would make each of those branches start out two more, and, unless to get the head of the tree, or the dwarf bush, into any particular form, we should never omit cutting down shoots to two eyes, and, after three years, should often cut out old lumps of wood and branches to thin the tree, which must never get crowded. By the same rule, and which admits of no exception at all, we should cut away all the spindly shoots from among the branches. Perpetual Roses, which have a continuation of shorter shoots one out of the other, and bloom every time they shoot, are very apt to be blind in the lower eyes or shoots, and, therefore, must not be cut in quite so short; and China Roses, and all constant bloomers, which require continued attention, should have only the old wood and the weak shoots cut away, because a new wood brings new bloom. Any violent pruning would throw the plant out of flower for a considerable time, while, carefully removing the seed vessels, and taking away weak wood to make room for the stronger, will keep them constantly flowering. This is especially requisite with climbing Roses, where the favourable aspect and other circumstances, may set the seed of almost every bloom: the swelling of their seed vessels will take all the nourishment from the shoots that would otherwise continue to grow and bear flowers; and the seed will often complete its growth and ripen before there is any thing like a general bloom again. The common China, and all of the same habit, will be found sometimes a month without any bloom in summer time, and the hips swelling all over the plant.

But, in pruning the general out-door Roses (not climbers), the operation may be so managed as to greatly prolong the bloom of a collection. Roses ought to be half pruned as soon as their leaves fall, that is, all the long shoots should be shortened, for the less head there is, the less danger of being damaged by the wind; but they should not be shortened as much as they are intended to be, because sometimes the frost damages the wounded ends of the wood, and it dies down two or three eyes. On this account they should be left two or three eyes longer than they are ultimately to be pruned. There are those, however, who run all risks, and complete the pruning in autumn. We recommend going over them all in autumn, to shorten the shoots and lessen the heads. In February, we should complete the pruning of one-half the number, say every alternate tree, those which have not been completed will grow as fast as those which have, but the two or three end buds of every branch may be taken off in May, which will throw them a month later than the half first pruned, and so give a succession of blooms for a considerable period. This pruning,

which leaves so few eyes to grow, adapts the flowers for exhibition, by greatly increasing the size; but in pruning the heads of standards or the bushes of dwarfs, regard must be had to what is required. If the head of a standard is wanted large, it would be idle to apply the kind of pruning that would keep it small. Again, if the cultivator would rather have a large quantity of small blooms than a small number of large ones, he must not cut too close, he may content himself with cutting out old wood and thinning the new only enough to give room for growth and bloom; but, it may be taken for a general lesson, that standard and dwarf Roses must lose a good deal of wood every season to keep them healthy and strong. When, therefore, they have arrived at the size and proportion that is desired, the knife may go freely to work to remove all branches that are in each others way, and to cut back the outer shoots to two or three eyes at most. In fact, when they have grown large enough, they ought to be submitted to the same treatment with the knife as those of smaller growth, only each branch may be then treated as a main stem, and the laterals be kept in bounds.

PREPARATION OF STOCKS FOR GRAFTING OR BUDDING.

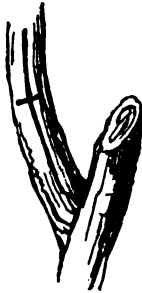
Stocks are procured, in general, from the nurseries, and the nurseries employ men to grub them up out of the hedges and woods; for the common Dog Rose or Briar is the principal stock used for all garden Roses, and almost every Rose flourishes on it. The stocks are chiefly useful for standard, whether tall, dwarf, or middling; they may be had also of men who go about the country offering them on their own account, but it is better to buy them of nurserymen, who send them picked and in better condition than any itinerant vendor. These may be planted in rich stiffish ground in rows, two feet apart in the row, and three feet between the rows. A stake every ten feet, and rods of sufficient strength, reaching from one to another, will secure them against the effects of the wind which will otherwise greatly disturb them. Before planting, the roots should be pruned, that is, great straggling roots should be shortened, and ragged ends should be cut clean. They should not be planted deeper than will place the crown of the root below the surface, and must be well trodden in and staked upright, whether by the simple means we have pointed out or by a single stake to each is immaterial. They should be cut in to a single stem the entire way up, and, when they begin to grow, you must go over them every other morning or twice a-week, to rub off all buds and shoots that may come where they are not wanted. Let the uppermost shoots stay on, because it often happens that a stock of six feet high, will have no shoots break out higher than half way up it, and if these, which are certainly not where they would be placed

from choice, were rubbed off, in the hope that some would come higher up, the stock would be lost or spoiled for a season, therefore rub off all but the upper two or three, and if these happen to be pretty near the top, and point different ways, they will enable you to bud in as many places as there are branches, not more, however, than one is absolutely necessary to form as large a head as a dozen, only it will be longer about it. Having selected the branches you intend to let grow, and which should always be the strongest that are where you want them, or near it, continue to rub off every bud that shows itself on any other part of the stock, and cut down the main stem of the stock to put above where the top branch comes out. All the strength being thrown into the two or three branches required, will ensure good strong wood for either budding or grafting. Keep the ground clear from weeds, and if any suckers come from them, dig down low enough to cut them off close, with even part of the root to them. At Midsummer they will be fit for budding upon, and in the autumn and following spring fit for grafting.

BUDDING.

The operation of budding, like that of grafting, to which some methods of budding are nearly allied, consists in neatly fitting a portion of one variety to another, and the success depends as completely in one case as in the other, on the neatness and quickness with which the work is performed. In grafting, of course, wood as well as buds must be taken from the one and fitted to the other; in budding, only the bud and a little of the bark is required. In budding, every leaf will produce a plant, for the incipient bud is at the base of each; but, there is a kind of budding called graft budding or bud grafting, in which, although only one bud is taken, a portion of the wood is taken with it. The most simple and effectual mode of budding is to cut a thin piece of wood and bark away from the sprig which you are taking the buds from, by putting a sharp knife in half-an-inch below the leaf, and drawing it upwards, bringing it out again half-an-inch above. This brings away very little more than the bark. A small portion of the hard wood will be found inside, which should be carefully removed, holding the leaf firmly between the finger and thumb of the left hand, and, with the point of the knife, raising one end of the wood from the bark, until you can hold it with the thumb and the knife, and pull it out. If the bud is in proper order, the wood will leave the inside of the bark very readily. You must now examine whether the incipient bud, or heart of the bud, has been dragged out with the wood, which is sometimes the case, and which will be easily seen on looking inside the bark. When there will be found a hole, if the heart the bud is gone, not perhaps larger than

hole; should this be the case, it is useless, and will never grow, although the bud may unite and continue green. This would be called blind, but, in reality, it is nothing but the heart of the bud dragged out backwards with the wood, which, if examined, would show a corresponding lump on the face of it. This has induced many to bud without removing the wood at all, and they will often take or unite very well; in small kinds, or where they are grown in pots, or they are trained against a wall, they may last for years, nevertheless, the danger is that the woody portion does not always unite, and the bud branch is more easily blown out by the wind, or breaks with its own weight. The cause of the wood not uniting is easily understood, though, to many, it might appear strange that the wood does not, in this operation, unite as readily as in grafting. The reverse, however, must be obvious when explained, that the surface of the wood, which the bud is placed on, under the bark of the stock, is rounding, whereas, the surface of the wood attached to the bark of the bud itself is flat, the effect then is, that except just in the middle, the wood does not touch. If the wood be taken from the bud, the bark of the bud exactly fits the wood of the stock, and the union is complete. Presuming then the bud to be thus prepared, the following is the operation to be explained: with the budding knife, cut a slit through the bark of the stock, an inch and a quarter long, down the stock, but not deep enough to hurt the wood, then make a cut across it half-way down;

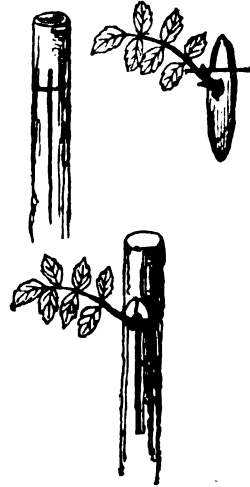


the bark will then easily raise with the handle of the budding knife, which is rather sharp, and, by working it up and down and under the bark of each side, it will raise easily from the wood.



There is no difficulty then in tucking the sides of the bark attached to the bud, under the sides of the bark on the stock, and, the bud itself being adjusted at the cross, the whole is tied round with bast matting, beginning at the bottom; the bark closes over the bud bark, now fitting close to the wood of the stock, when the bast is crossed and crossed until it reaches the bud, it is crossed rather wider to miss the bud, and is continued so as to enclose the upper portion of the slit, and effectually secure the bud, which, with its leaf, is the only part exposed.

Some of the old school used to cut a slope to the upper part of the slit above the cross cut, and which they made much shorter than we do, and the bud being cut off.



The bark of it was pushed down to the cross cut, and was cut off just above, so that by pushing down the bud a trifle lower, it fell into its place without effort or contrivance, but was not held at all by the bark above the cross cut. We prefer the former way over and over again. After it is tied securely, it is an excellent plan to tie some very loose moss over the bud for some time, and to keep it damp; for, as budding should chiefly be done soon after Midsummer, the heat is often sufficiently great to dry up the buds before they can take or unite, and the moss is a certain preventive. Among the points to be attended to most especially are, first, great quickness, for the sap of the bud and the sap of the stock soon dries, and if allowed to do so, failure is inevitable; therefore every thing ought to be in readiness before the knife is put into the bud or stock, and the whole operation should be rapidly performed. Second, care should be taken to perform the operation at the season when the bark readily parts from the wood. This may be tried at Midsummer upon some of the stocks, and if the bark cannot be very easily raised on each side when a long cut is made to reach the wood, it must be delayed awhile, until the bark will, what is tech-

nically called, run, which means that it will easily leave the wood, and that any rather blunt instrument introduced beneath it, and run along the branch, it will strip up with ease. Third, select upon the stock such branches as are best placed to form a head, and are the largest of the present year's growth, and bud these as close down to their bottoms as it can be done conveniently. Fourth, leave one or two eyes, or one shoot, above the place where you bud a branch. To draw the juices, past the bud, and cut the rest in close; also cut off every branch not intended to be budded, and especially remove all the shoots that come from the root or main stem of the stock. Fifth, although the branches or shoots from which we take buds will keep some days in damp moss, and we are frequently obliged to get them at long distances, and bud with success, that success is more doubtful every hour the budding is delayed after the wood is taken from the tree, as the juices of a branch are wasting from the moment it is detached from the parent. Go over budded roses almost daily to see that the moss is damp, and to remove shoots before they are strong enough to take much nourishment from the tree, and as soon as the buds have taken hold, bend down the shoots that you left above them, so as to check their nourishment, and throw more into the bud.

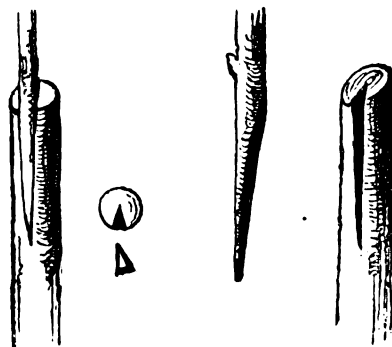
China, and all smooth wooded kinds, will bud well at any time of the year, so that they are growing, and the kinds to be budded on them are of the same nature and growing also.

GRAFTING THE ROSE.

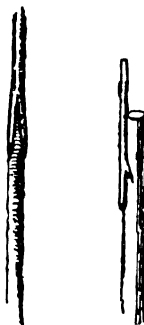
This may be performed as many ways as a broken whip or broken stick can be spliced. The only thing required is a good fit, and the stock and the scion (as the piece to be grafted on it is called) to be something nearly alike in size. These accomplished at the right season ensure success.

We have said that only certain conditions are necessary to ensure success, but it is not absolutely necessary that the stock and graft should be of a size, because a very small graft can be attached to a very large stock, though a large graft cannot be attached to a small stock. A very sharp knife is necessary, for the cuts must be made clean, without bruising the wood or bark of either graft or stock. In directing this operation the sketches are better than descriptions, but it is necessary to perform the operation between September and the end of March. We prefer it at the exact season the buds begin to swell, for we generally find them unite more quickly, and consequently there is less chance of failure. We have seen a French nurseryman so successful in spring grafting, that of twenty-two grafts of good varieties on the common briar stock, all united and made very fair summer growth, and seven or eight bloomed

well enough to exhibit; nor was he particular about his mode of grafting, one portion was grafted by two sides of his scion or graft angularly, like a thick-backed knife, and cutting places to hold them, down the sides of strong stocks, thus:



he cut the stocks of a wedge shape, and of others splitting the scion or graft, he cut the inside out almost the form of a clothes peg, to fit the wedge, and the graft was perfect. Others were cut flat on one side, and the scion flat to go close to it, a notch, then, in the scion to fit into one in the stock completed it.



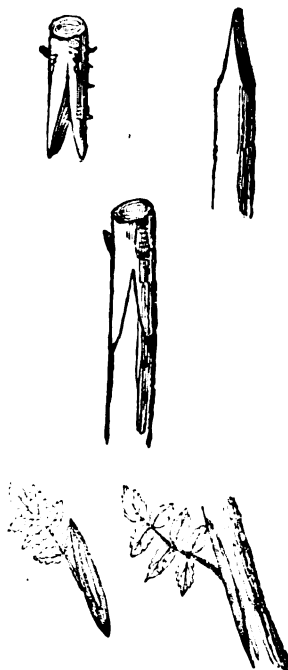
In this kind of grafting the portion of stock on which we graft ought to be the size of the graft itself, but it will do somewhat larger, if care be taken to have the bark meet on one edge perfect, the other will, of course, fall very short; but if the smaller scion were put in the middle of the larger stock, and neither of the sides had the bark meet, failure would be certain. This is not only with regard to grafting the Rose, but all other trees and shrubs also; and if a slit of the form to hold a wedge-shaped graft were made on one side the trunk of an apple or pear tree, and a scion no longer than one's finger were made to fit in, and the bark of the outer side of the trunk and the scion were level, the graft would be as sound as if the stock were the same size, and the work, though not quite so handsome, would be quite as complete. But in the Rose tree there is not so sound a stem, and therefore the discrepancy should not be quite so great. It is also unnecessary to have so great a discrepancy, and rarely necessary to

graft on the main stem, side branches being quite as well, and much safer.

When your grafts are fitted, you take a piece of the common bast matting and tie the work neatly and firmly together, and if the graft is above ground, it must be covered with grafting wax, made of resin and bees'-wax, equal parts, and a little tallow to soften it, for it ought to melt at a heat sufficiently low to enable you to lay it on with a brush, in a fluid state, without scalding the plant. If you use clay, it is not so certain nor so clean: such small trees are by no means adapted for large lumps of clay, and small lumps only deceive us. The wax ought to be laid on about as thick as treacle, and it should be of such texture when cold, that the sun ought not to make it run. There is scarcely any thing else used in France for grafting purposes, and, as the object of any covering is to keep the air from the wounded parts, the wax accomplishes this more perfectly than any clay can, and there is no loss from cracking. The wax is used for bud grafting as well as ordinary work; but in root grafting, as the entire of the worked part is planted under ground, there is no necessity for waxing. When the grafts have united, and the scion begins to grow, they must be well secured against wind, and the wax and matting must be removed; but it is well to tie it again a few weeks without the wax, until the union is perfect, as a graft will often grow when the union is partial, and, in that case, if it were not tied up again carefully, it would, in all probability, give way.

BUD GRAFTING.

This is resorted to when it is the season for grafting, and the budding operation cannot be performed by reason of the wood being ripe. It consists of taking a small piece of wood with a bud on it, and so fitting it to a stock that it will unite and grow, and make as perfect a plant as if budded in the ordinary way. Any of the numerous plans of grafting will answer, provided there be wood enough to make the usual joint, but as the wood is generally too short, the object being to make every leaf bud form a plant, the general practice is to adopt more appropriate plans; the following are some of them: In short, invention will point out fifty ways, according to the wood we have to use, and the stocks we are to graft on. Bud grafting is occasionally adopted where the wood and the buds are very young and scarce, even in China sorts which would bud at any time of the year while growing. The ends of young shoots which would strike may be taken off very short, and the next bud or two, which would be too tender to bud with, would, with a small piece of wood attached, make plants by means of bud grafting; and the best and safest plan for such tender wood is as follows: get for a stock a common China; select a shoot the same size

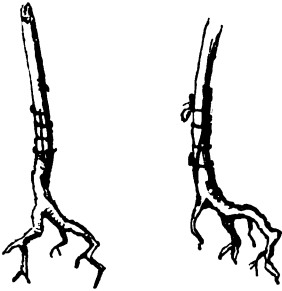


as the wood, with the little bud, cut the small piece of wood wedge-fashion, by sloping it on each side of the bud, then slit the stock about as far down as will take in the wedge, and cut away the wood inside, the slit bringing it off to a sharp edge, so as to bring the bark of the two close together. This may be slightly tied in its place, and the grafting wax applied, taking great care that it is not laid on too hot, and that the bud is free to grow. The sole object of the grafting wax is to keep the air from the join, and therefore nothing but the join need be covered with it, and that not thickly; indeed, some persons make the join so close that they succeed without waxing at all. This operation may also be reversed by making the slit in the bud wood and cutting the stock to a wedge, as above.

ROOT GRAFTING.

In this process, which is exceedingly simple, the work may be done in the house under cover all times of the year for the China and smooth barked sorts, but for the garden kinds, or rough barked varieties, which are completely deciduous, it may be done any time in the autumn or winter, until the buds begin to swell a little. The roots to graft on may be had by digging up suckers from among the common Rose trees in a garden, or by taking roots from a few common Roses. These roots must be grafted as soon as they are taken up, and they must have some fibre to them, not merely be lumps of root. At the upper portion of this root a long slope may be cut, and in a piece of the variety required to be grafted, a similar one may be cut, so that

there be an eye at the bottom of the shoot so grafted ; or it may be done so by taking a square



piece out. As many as you please may be prepared thus, and planted out or potted immediately in rows, a foot apart in the rows, and two feet between the rows, planting the graft completely below the surface. The China shoots, if done in winter, may be kept growing as freely as a plant, and will strike root of itself if the other does not produce nourishment enough for it. The summer garden Roses will break out into bud at the same period, or nearly the same, as those which have been moved, but not grafted, the check only being the same as removing a tree or plant, and not more.

PROPAGATION BY CUTTINGS.

The kind of Roses which strike most freely, are those with smooth bark, such as the China. The tea-scented and hybrids partaking of their characters, most of which will root in a shady border, under a common hand-glass, but it is almost a fixed principle that slight bottom-heat hastens the operation. Take off the cuttings close to the stem they grow out of, with the heel attached to it, that is to say, so close that the enlarged bottom of it comes off with it; but, as cuttings are wanted very often in larger quantity than these will supply, they have, when taken elsewhere, to be cut to close under a leaf, for at each leaf there is a bud, and where there is a bud, the root will form; cut off the leaf close to the stem, but do not bruise the bark. Cuttings too should be always young wood, and not old stems. Get a pot according to the quantity of cuttings you have, and procure a solid glass, called a bell-glass, or if there be a hole at the top of the dome, stop it, or if you use a regular small hand-glass, it must have no holes in it, nor should it admit air. This glass must fit within the rim of the pot. Now fill the pot thus: one-third crocks (broken pots made into small pieces), then half loam and half decomposed dung to within one inch of the top, level it, and by striking the bottom of the pot on the table, shake it together a little, then fill up to the edge with silver sand, which must be watered with a fine rose water-pot until it is saturated; then put in the cuttings to just touch the compost beneath the sand, slightly water them to close the sand round them. Cover the

glass over them, and then place them in the shade; or if there be a little bottom-heat in some declining hot-bed, or there is convenience to make some, by digging out eighteen inches of earth and filling it with one foot of warm dung and six inches of tan, place the pot on it, or two or three inches down in it, according to the heat, but the heat must be slight, and the pot raised to the surface if otherwise. The glasses must be wiped inside every morning. But, instead of taking all this trouble, a shelf in the greenhouse, or a place in a pit, or even a shady border will do. The period of taking these cuttings must be regulated by the state of the plant, but autumn is best. Although we have stated what cuttings are best, any wood of the present season will do, there being one eye to root from, and one to grow from. Most of the spring growing China kinds may be propagated from the prunings, by inserting them almost close to each other in common pots of any size, and putting them all the winter in a pit or at the back of a greenhouse. When they are struck, they must be potted in separate pots, or planted out in beds, or treated, as we have directed in a former treatise on the Culture of Roses in Pots.

PROPAGATION BY LAYERS.

This plan is for Roses in the open ground. Take under branches that are easily pegged under-ground, cut a split through the wood an inch long, leaving off just under an eye, twist it round once, and peg the split part under the surface, then water, and leave it till spring: or cut a notch half way through the wood just under a knot or eye, and peg it down: or, in most cases, if you put a strong peg just below a joint, so as to bend it sharply beneath the surface, it will strike without much difficulty.

PROPAGATION BY PARTING.

Roses on their own roots will throw up shoots from the bottom, and in two or three seasons get quite thick: by digging them up in the Autumn, and parting the roots into as many pieces as may have shoots to them; every one forms a plant directly, and may be planted where it is wanted, at once, or be placed in a nursery bed.

STANDARD ROSES ON THEIR OWN ROOTS.

Roses of almost every kind may be formed into standard trees. Select a vigorous shoot, and let it grow up, encouraging it by rubbing off the side buds, and cutting away all other branches from the root. When this is tall enough for your purpose pinch off the top; let the three or four top buds grow, and rub off all others; let these be pruned in season just as if they were on stocks.

ROSES FROM SEED.

Notwithstanding all that has been said of

hybridizing, the Rose is naturally given to sporting, and we disapprove altogether of so many distinctions in families, because the best judges in the world are divided in their own opinion as to which a Rose belongs to. So nice are the distinctions which make the difference between one family and another; that by-and-bye we shall think seriously of jumbling the whole lot into one large family, and writing a descriptive alphabetical catalogue, in which each Rose shall answer for itself. Those who grow any number of Roses will be sure to find some bearing berries or heps, which they may gather in autumn without any distinction, and keep in a large flower pot full of sand till the spring. Those, however, who wish to accomplish something out of the common way should select from among their collections some of the varieties distinguished for the following properties: broad, thick, smooth edged petals (cupped or reflexed no matter). They should be varieties which have the stamens visible and the pistil perfect. They should be as different in colour and habit as possible. These should be planted in strong soil close together, and as far as can be removed from the general collection. From this group save the berries, and pot them in sand, as beforementioned. In the spring, that is to say March, these should be rubbed out, and sown in large flower pots, say No. 8. After putting in a proper drainage with crocks two inches high, fill the pot within half an inch of the top with that compost which will grow almost every thing, loam, composed of rotted turfs, and well decomposed dung from a melon or cucumber bed, half and half, strike it together a little, and level it, and sow the seeds thinly over the surface, and sift half an inch of similar compost over it. Place the pots in the open air in an open situation, and take especial care the seeds never get thoroughly dry, as it would be fatal at particular periods. They ought to be protected from vermin, for which purpose they should be covered with coarse wire, similar to that with which the panels of safes and tulip cases are covered, with meshes large enough to let in all the light, and let through all the rain, or water when you are sprinkling them. If the watering be not neglected the plants will come up in May; if they are allowed to get dry and wet alternately they will not move till the second spring, and perhaps not all. But when we say they must not be allowed to get dry, we mean literally dry, not that they are to be swamped and kept wet, for that is as likely to rot them as any thing. They ought to be refreshed with water in dry weather to prevent the soil actually drying down so low as the seed; not but the surface may often look dry without requiring much water, because the great body of compost beneath will take a long time to get rid of its moisture. When the seedlings are large enough to handle conveniently,

they should be carefully potted into sixty-sized pots. They must be lifted with the compost to their roots, which must not be broken. After being refreshed with water they should be put into a common garden light, and shaded for a few days from the hot sun, carefully watered as they require it, and suffered to grow about six weeks, when they should be planted out in good rich soil, similar, indeed, to that in which they have been growing. They should be in beds, with a temporary covering to protect them completely in winter, because they may not all be hardy. As soon as any are large enough to enable you to take buds, all that promise any novelty by their foliage or growth should be budded on strong stocks. If any are of the smooth wooded or Chinese kind, or indicate tenderness, it would be well to keep them potted, or plant them out in an old melon or cucumber bed that has lost its heat, for the convenience of completely protecting them. By budding them as soon as possible the bloom may be had the third season. If the grower would like to obtain the character of any two particular Roses combined in one by artificial impregnation, the pollen or yellow dust of the one should be taken and applied to the other, and the parent to save the seed from should be the one whose habit is best. For instance, suppose one to be a moss, and the other to be a yellow Rose, the great design being if possible to obtain the yellow colour in a moss Rose, the pollen should be taken from the yellow and applied to the moss. Mr. Rivers thinks that it is necessary to remove the anthers from the one to be impregnated, but this is only desirable when there is danger of the flower impregnating itself before the pollen of another can be applied, and if there be any danger of this, they must be removed the day before. But if the pollen of another flower be applied fairly, without any mixture of its own, the operation is complete to a certain number of the seeds, and its own, or any other, will have no effect on those impregnated, though it may fertilize any that the other missed. However, it is a common practice to remove the anthers of the flower to be impregnated to make sure. A pair of tweezers are the best instruments to remove the anthers with, and they must be looked for before the Rose has fairly opened. So also are the tweezers the best means with which to take the anthers from one flower to the other, as soon as they burst, and show the yellow powder, which is to be dusted or rubbed upon the pistil of the variety to be fertilized. The Rose will sometimes be years before it blooms from seed unless hastened by the means of budding or grafting.

Never allow a single bud of the stock to grow, nor allow any sucker from the root to remain a week, because every leaf that comes from the stock weakens the variety worked on it.

Whenever Roses are coming into bloom a watering with liquid manure once a week will assist both the colour and strength.

Budding several sorts on a stock, when well done, is a pretty contrivance. In doing this, care should be taken to have varieties that

bloom at the same season, and are of much the same habit, besides being Roses of different colours.

If you want to cultivate Roses in Pots, look to the treatise on that subject given in a former part of this volume.



THE PROPERTIES OF THE ROSE.

THERE is no flower more difficult to define than the Rose, and the difficulty arises out of several curious facts. First, the Rose is the only flower that is beautiful in all its stages, from the instant the calyx bursts and shows a streak of the corolla, until it is full blown. Secondly, it is the only flower that is really rich in its confusion, or that is not the less elegant for the total absence of all uniformity and order. These circumstances naturally give rise to various opinions, as to the actual state in which the Rose is most splendid, and multiplies the difficulties of laying down distinct rules for estimating the properties which should constitute perfection. The very fact of its being beautiful, from the time its calyx bursts, makes the single and semi-double Roses, up to a certain stage, as good as the perfectly double ones are; and there is yet another point in the construction of some varieties, which makes them lose their beauty when they are full blown. For instance, the Moss Rose is a magnificent object so long as the calyx is all seen; but, so soon as the flower fully expands, all the distinction between a Moss Rose and a common one has departed or is concealed. From this one fact, we insist,

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that Roses, even for show, must be divided into distinct families; and those qualities for which families are most distinguished, must be exhibited to the best advantage. This brings us at once to an acknowledgment, that the grand characteristic of a Moss Rose is in the calyx: their properties must never be estimated by full-blown flowers, and, therefore, all the varieties of Moss, from the *Cristata* to the *Moursue* presque partout, must be exhibited before the flower expands enough to hide the calyx. In the present state of Floriculture, we can hardly allow that any other description of Rose should be grown if semi-double. Those who are more indulgent, consider that a climbing Rose or a Rose of peculiar habit, or, indeed, any other distinction, should be sufficient to justify semi-double and imperfect flowers. Certainly, if we concede any thing, this would be the extent of our concession, that a new colour should justify the saving of any Rose, if it was as single as that which graces our present number. But we are much mistaken if any who have been used to grow the best double Roses, would give much for a semi-double or single variety. If there be any distinct and valuable feature in a plant, which jus-

tifies the growing of a variety for its beauty as a *plant*, the bloom is at once out of the question; and we hardly take such a variety, to be worth either the florists' keeping, or the florists' list. There are, however, some properties which apply to all Roses, whatever be their characteristics in other respects, and, therefore, must be taken as a fixed and estimable point in the construction of a flower.

1. The petals should be thick, broad, and smooth at the edges.

Whether this be for a Moss, which is never to be shown fully opened, or the florists' favourite, which is to be shown as a Dahlia, this property is equally valuable, because it is an invariable fact, that the thicker the petals, the longer the bloom is opening, and the longer does it continue perfect when it is open. There is another essential point gained in thick petalled flowers. The thicker the petals the more dense and decided the shade or colour, or the more pure the white, if white the Rose must be, while the most brilliant scarlet would look tame and watery, if the petal was thin, transparent, and flimsy; hence many semi-double varieties, with their petals, look bright enough whilst the petals are crowded in the bud, but are watery and tame when fully opened and dependant on their single thickness. There is another property peculiar to some Roses, and which is an essential point in the value of any given variety.

2. The flower should be highly perfumed, or, as the dealers call it "fragrant."

Now, whether this is to climb the front of a house, bloom on the ground, or mount poles or other devices, in all cases fragrance is one of the great charms which place the Rose on the throne of the garden as the Queen of Flowers. One more essential property in a Rose, and equally applicable to every kind, is—

3. The flower should be double to the centre, high in the crown, round in the outline, and regular in the disposition of the petals.

This would seem to be a little contradictory, after saying, that in a Moss Rose the full-blown flower cannot be allowed, because it conceals the grand characteristic of the plant; but it is not contradictory, because we defend it on grounds which render doubleness equally valuable to the variety, in which it is hardly to be seen developed, as to the kinds which are to be shown in single specimen flowers. The more double the flower, even when amounting to confusion, the more full and beautiful the bud in all its stages. Those who have noticed the single and semi-double Moss Roses, will remember that they are thin, and pointed, and starved-looking affairs, while the old common Moss Rose, large and double as the Cabbage Rose, is bold, full, rich, and effective from the instant the calyx bursts. At this point we shall have to branch off, and take families, perhaps the Moss family is the best to commence with, and those who now fol-

low us through the different species or varieties, will find that we start fair from the three properties which we insist is essential to all; our readers will therefore consider that when we mention the properties of the Moss Rose, and commence with number four, we presuppose the first three set down again.

MOSS ROSES.

4. The quantity of Moss, the length of the spines, or thorns, or prickles which form it, and its thickness or closeness upon the stems, leaves, and calyx cannot be too great.

This being the distinguishing characteristic of Moss Roses, the more strongly it is developed the better.

5. The length of the divisions of the calyx, and the ramifications at the ends, cannot be too great.

As the entire beauty is in the undeveloped bud, the more the calyx projects beyond the opening flower, or rather the more space it covers the better.

6. The plant should be bushy, the foliage large, the flowers abundant, and not crowded, and bloom well out of the foliage.

7. The colour should be bright or dense, as the case may be; and if the colour or shade be new it will be more valuable, and it must be the same at the back as at the front of the petals.

These seven properties would constitute a Moss Rose, a valuable acquisition, and probably the first great step will be a yellow one. We will now take those Roses which have large flowers, capable of being exhibited as dahlias are shown, single blooms, face upwards, in stands.

4. The petals should be imbricated, and in distinct rows, whether they be reflexed like some of the velvety Tuscan kinds, or cupped like a ranunculus, and the petals to the centre should continue the same form, and only be reduced in size.

5. The colour should be distinct and new, and stand fast against the sun and air till the bloom falls.

6. The stems should be strong, the foot-stalks stiff and elastic, the blooms well out beyond the foliage, and not in each other's way.

The very worst habit a Rose can have, is that of throwing up several blooms close together, on short stiff foot-stalks, some of which must be cut away before the others can be fully developed. As show flowers they are bad, and as plants they are dirty and untidy. The side buds prevent the centre flower from opening circularly, and, when the first beauty is off them, it is a dead Rose held fast between two living ones. As these show Roses may be found in almost every family, we must say nothing about the general character of a plant. We now proceed to other distinct families.

THE PROPERTIES OF NOISSETTE ROSES.

However singularly some catalogues class these Roses, we intend by this name to distinguish those Roses which bloom in clusters; and assuming once more that the three properties which belong to all, are again set down, we proceed to

4. The clusters should be sufficiently open to enable all the flowers to bloom freely, and the stems and foot-stalks should be firm and elastic, to hold the flowers face upwards or face outwards, and not to hang down and show the outside instead of the inside of their blooms.

5. The bloom should be abundant at the end of every shoot.

6. The blooming shoots should not exceed twelve inches before they flower.

7. The blooms should stand out beyond the foliage, and the plant should be compact and bushy.

We now proceed to a family which we shall designate climbing Roses, and which comprise blooms of the Noisette kind, that is in bunches, blooms which come singly, large and small flowers, early and late, and which comprise, in fact, all kinds of Roses which grow tall enough for training; and for the last time we assume that the three leading properties are clearly recorded.

CLIMBING ROSES.

4. The joints should be short from leaf to leaf, the blooms should come on very short branches, and all up the main shoots, the plant should be always growing and developing its flowers from spring to autumn, and the foliage should completely hide all the stems, whether the plant be in front of a house, or in any given device.

Having now travelled through the chief of the families which require separate notices of their properties, the first three properties mentioned being required in all of them, we add, by way of a finish, for all except mosses, that

LAST. The foliage should be bright, green, and shiny, and though not likely to be found in many varieties, it should be permanent, and constitute an evergreen.

By this we merely establish a point in favour of an evergreen, and all points beyond those mentioned are left equal. We will not admit that a Rose as large as a plate is better than one as small as a bachelor's button. Wherever this is to be considered, the societies ought to give out their conditions. When the same variety is shown by two persons, the larger, if equal in other respects, is the better, and a new Rose twice the size of an old one, but in all other respects the same, would undoubtedly be more valuable than the old one—but, one of half the size, and in all other respects equal, would be just as much better than the old one as the larger would be.

We have hitherto been first in the field with any thing like a distinctly defined notice of the properties of florists' flowers, and have supplied Dr. Horner, Mr. Wildman, and some other equally *original* writers, with facts which they have been pleased to appropriate to themselves, and republish without acknowledgment. We are now first with the Rose, but not so perfect as we mean to be; yet, if any of those who have considered, or may consider, the subject, can improve upon it, we shall be the first to acknowledge it; and in republishing our own at any future time we shall not imitate the *honourable* example set us by our copyists, and call the addition or improvement our own, but we shall fairly quote the author.

WEEKLY JOURNAL OF GARDENING.

TULIP growers may now begin to arrange their beds and make alterations, as proposed by the memorandums in their books. They may depend on one fact, that Tulips had better be in the ground a month too soon than a week too late, and all small offsets had better be in the ground forthwith; it will save many a one from perishing. Small seedling roots should also be planted.

AURICULAS.—Keep off the hot sun. It is at this time of the year hot enough to check or even destroy potted plants allowed to receive all its heat and influence. It has sometimes been hot enough to burn up the small fibres next the pot.

BOTANY BAY PLANTS of all kinds in pots, Americas, &c., must not be allowed to have all the sun, and the latter must have a great plenty of water, and would do better actually plunged into the common earth.

Constantly watch DAHLIAS, and look over the traps for earwigs, whether these be common bean stalks, flower pots, or otherwise.

Look over your BUDDING of TREES; it is yet time enough in many cases to repair where they have manifestly failed.

COLEWORTS.—Transplant from the seed bed by drawing out while they are too thick, those remaining will be strengthened; plant them out half a foot in the rows, and the rows a foot apart. Those in the seed beds may remain another month. When these fibrated ones grow, every other one may be drawn, and the others left to cabbage.

AROMATIC PLANTS of all kinds should be propagated without loss of time; this may generally be done by taking up the roots and parting them to single stems, torn downwards.

Constantly a few preceding weeks' directions should be read to see if all the instructions have been observed; for many of the operations which are noticed when they ought to commence would apply to every succeeding week for months;

such as hoeing, weeding, watering, earthing up, which were rarely noticed except when such directions ought to begin. Many repetitions occur, but it is because those who have not attended to the first may do so before it is quite too late.

August 19, 1843.

JOURNAL OF GARDENING FOR SEPTEMBER.

MULCHING of **DAHLIAS** is a plan to obtain good blooms in a bad season, but your diligence in earwig hunting must be increased, inasmuch as the mulching affords so great a harbour for them. There is another fact which requires attention; the roots of the Dahlia will come above ground, which will appear covered with their fibres; therefore, if watering be neglected too long so as to dry them, the plant will flag almost too much to recover.

In propagating **DAHLIAS** at this season, an old melon bed, into which the pots with the cuttings placed round the edges are plunged, and covered close with a hand-glass, is by far the most useful medium; but the sun must not reach the cuttings the first fortnight, and the cuttings ought to be so instantaneously inserted and watered as to prevent the least flagging; for if this be neglected, as is too often the case, through taking off too many at once, they are longer striking, if they strike at all, and rarely perfect their bulbs. When struck enough to pot off give them bottom-heat and shade, and grow them as hard as you can until they have made a good pot root; let them grow as long as they seem inclined under protection from frost, and without any check, even when old plants are taken up.

The best contrivance to carry **DAHLIAS** is a succession of little stools, with feet at each corner, of which, one above the other, a box may hold three or four. The feet should be three inches high, the holes for the tubes five inches apart, the tubes two inches and a-half deep, and half-an-inch diameter; a stopper made of a potato, with a hole through it, just large enough for the stem, completes the contrivance, for the water does not escape, the bloom is held steady, the height of the stopper may be cut to keep the flower just clear of the woodwork. This stool ought to go easily into the box, a second ought to have the holes to come in the centre, between the flowers, in the lower one; so that if the first contains four rows of five each, the second would only contain three rows of four each; the third may be like the first; and if a fourth were used it would be like the second, but these will hold fifty-two, and a second box is better.

AURICULAS.—For those who intend showing prizes, and to whom two or three different seasons are almost indispensable, it will be desirable to pot the last of their plants. So much has been written about the necessary compost for

these beautiful flowers, that half the old fanciers will ridicule our notions of simple treatment. We use clear, light, rich loam, well decomposed cow-dung, and a little sand. It is useless to say much about the proportions of sand, because it must depend on the consistency of the loam, the object being to render the soil sufficiently light to let water run freely through it. In a general way, a third of the decomposed cow-dung, a third loam, and a third sand. If the plant exhibits any appearance of rude health and growth, do not take away too much of the ball of earth, so as to injure the fibres materially, or disturb the root too much; but if the root be matted much, it is better to take the matted root off. Your pot should be one-fourth full of broken potsherds, then some compost, till the ball will rest on it a right height for the plant; fill the pot with compost, gently shaking or thrusting it all round the plant, which may be earthed up to the shoulder of the root, which should be just above the mould; place them in a frame, shade them, gently water them occasionally. If the plants be not perfectly healthy and strong, shake the compost all out, examine the top, and if at all decayed, or it be too long, shorten it to where it is sound, and re-pot it in entirely new compost.

SEEDS of Tulips, Crocusses, Hyacinths, Iris, and bulbous roots, in general, may be sown in light earth, in boxes, or beds, according to the quantity.

Cut down decayed flower stems, trim in the spent branches of the China kinds of Roses.

See that all buds that have taken in Roses are released sufficiently to grow, and take off all shoots from the stocks.

DAHLIAS.—Crowded branches cut right out; pick out the small buds on each side of every leading bloom.

Propagate **SHRUBS** and **TREES** by cuttings, and especially all deciduous plants. Layers also may be now made of every kind of hardy plant.

Give **HEATHS** and **Botany Bay Plants** in general, plenty of air to ripen their wood; see, however, that they are never too dry.

Turn out the soil from **TULIP BEDS**, and turn it over weekly, giving it sun and air throughout, and picking out every grub or wire-worm.

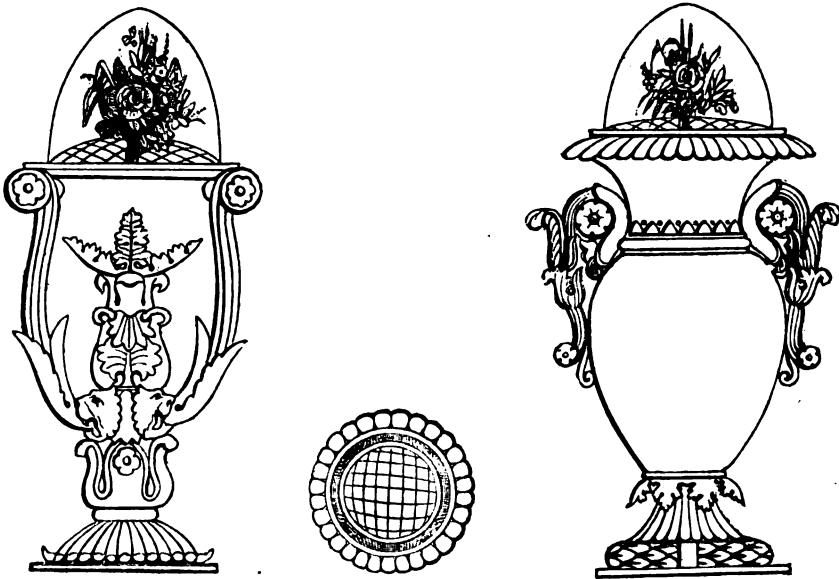
Pot a few of your **HYACINTHS** early, as well as some other Bulbs, Narcissus, &c., &c.

AURICULAS.—Complete the re-potting.

CARNATIONS, **PICCOOTES**, **PINKS**, &c.—Take off and pot layers, and transplant pipings.

Continue to propagate valuable **DAHLIAS**, especially promising Seedlings, by cuttings.

Hoe between **CAULIFLOWERS** which are coming to flower, draw the earth up round the roots to form a basin, and liberally apply water in dry weather.



THE PRESERVATION OF CUT FLOWERS.

WE recollect hearing our grandmothers and grandfathers talk about keeping the air from nosegays, to make them live longer; and as they preferred small, and rare flowers, to large and common ones, it was no uncommon thing, for the dames of the last century, to have small bouquets, in small cups, in the middle of a plate of water, and a tall beer-glass, turned wrong-side upwards, to cover over them; the edge of this glass was immersed in the water, and thus kept the air from the flowers, prevented the evaporation of their juices, and preserved them much longer from decay. The circular wire work represented in the middle sketch is fitted to the inner edge of the vase, for the purpose of better arranging the flowers and keeping them up above the edge of the vase, and this would be still handsome where the vases were longer and flatter. We like the plan exceedingly, where it can be adopted ornamentally, and as it was practised about the time of Queen Elizabeth, we intend to apply the principle in various ways, and to dignify it with the name of the Elizabethan Flower Vase. The two sketches at the head of this paper, are part of a series

which we shall present, and which are an adaptation of the principle in its most simple and efficacious form. No matter what is the construction or shape of the vase, the top is formed with a grove or gutter all round, capable of holding water; in this grove the edge of the glass shade rests, and the water in the grove completely shuts out the air. The glass may be wiped occasionally to show the flowers; but as the fragrance of flowers is as gratifying as their beauty, it is taken off altogether when desirable, and the fragrance as well as the colours may be enjoyed. The Elizabethan Flower Vase may be made of any form, the only principle engaged or involved is that of shutting out the air by means of a glass shade as it is called, with its edge immersed in water; whether the vase be deep or shallow, or the glass be tall or short, the only improvement we take credit for, is that of making a small grove or gutter round the margin, answer the same purpose as setting it in a dish of water, and thus enabling us to remove it about conveniently, and adopt any form that ingenuity or fashion may dictate.

GARDEN LITERATURE.

GARDEN Literature is very different now from the Garden Literature ten years ago. The establishment of the *Horticultural Journal* was the commencement of a new era, that being the first work that partook of the character of a recorder of passing events, and differing only from a newspaper in the fact of its being published

book form, and monthly. In 1837 the editor of that work, finding the disadvantage of a whole month intervening from one Number to another, commenced the publication of the *Gardeners' Gazette*, and was receiving substantial proof of its utility in its great circulation, and a large advertising connection. Four years after-

wards, rather less, a dispute, into the merits of which we will not enter, separated the editor and the *Gazette*, and the total helplessness of his successors encouraged a *Gardeners'* newspaper got up as nearly as possible as the *Gazette* had been, and edited, by Dr. Lindley, which paper, having no power opposed to it, soon took the ground which the other had lost. The original editor after more than two years absence, has once more taken the management of the *Gardeners' Gazette*. And we now take up these papers, as rival productions. It requires no opinion of ours to be expressed as to their respective claims, except as each article may prompt us when we select any. The two papers are fairly rivals, and not on the most good natured terms, but nevertheless, fairly matched. The *Chronicle* is polite, full of information, and rarely out in its calculations on the subjects of Botany and Natural History, but the *Gazette*, is by far the best on the subject of Florists' Flowers.

From the Gazette.

PRUNING CHINA ROSES.—China Roses ought not to be pruned too closely. They should only be grown where they have room to develop their habits. The pruning should be to remove old wood, and take out weak shoots where they are too thick and in each other's way. They will bloom better now, but they must not be reduced much. Take out any leading shoot that is too vigorous for the remainder, but the wood must not be too much shortened. But when vigorous shoots come from a China Rose that is already filling up the space that it is required to supply, and it is blooming well, the best way is to cut them off close to the stump, for otherwise, they take the larger portion of the nourishment from the root of the plant, which will soon show signs of weakness; but if the plant is getting ragged and shabby, or the new shoots are likely to fill up better than the old portion does, it is better to let the shoots grow; for although they may not bloom until they have grown several feet, they are sure to flower the same season. Generally speaking, if the plant is doing all you want it to do, the shoots alluded to should be taken off before they attain any ascendancy.

CHINA ROSES grown dwarf in the borders, are sure every now and then to take to growing instead of blooming. The best precaution against this is to pot them, and every now and then to turn the pot round in the soil, to break off any roots that may have struck through the pot.

GERANIUMS.—One of the most prevailing faults of the that GERANIUM is the three under petals do not lay well together, and the flower is in consequence loose.

PRUNING STANDARD FRUIT TREES.—There is no reason why, STANDARD TREES should not be as regularly pruned as those on a wall—

the fruit would be all the better of it. The rule for pruning should be the same as is observed with wall fruit, excepting that branches may be left all round, whereas on a flat wall there can only be as many as can be nailed flat; there is hardly an orchard in which justice is done in the way of pruning, but the fruit would be as much improved in comparison with the unpruned, as it is on a wall attended to, in comparison with a wall neglected.

NEW SEEDLINGS.—Upon this principle we proceed. If a SEEDLING is an advance or improvement upon others of its colour in general cultivation, it is worthy of being added to the collections, whether its inferiors are discarded or not, but if there be one flower of its colour superior to the seedling, reject it without hesitation, for we do not want to go back again to worse than we have, if we are unable to go forward, and in this consists the true principle of judging novelties.

HUNT'S PATENT POTS.—May not have been invented by himself, but certain it is that they have a peculiar recommendation which very few other inventions possess, and that is that they in no one single point interfere with the notions of those who prefer the old sort.

DAHLIAS.—Many Dahlias only grow three feet when in pots or poor soil, that would grow to very tall dimensions if in good soil and situation.

BERBERRIS AQUIFOLIA.—Rub out the seeds from the pulp, and wash them in warm water, sow them in a flower-pot of large size (16s., 12s., or 8s.) thinly, keep them in the greenhouse, never allowing the soil to dry thoroughly; when up, and with four leaves, prick them out in other large pots about an inch apart, and keep them in the house or free from frost; when large enough, say two inches high, pot them singly in sixty-sized pots, to be changed to forty-eights as soon as the roots fill the sixties, and to twenty-fours as soon as the roots fill the forty-eights; by keeping them all the cold months in the greenhouse, they continue growing. In summer, set them out on good ground, and water them when required.

From the Chronicle.

EARLY ANNUALS.—*Silene pendula* and *compacta*, with *Nemophila insignis* and *atomaria*, are among the first to flower in spring; and here you have at once pink, scarlet, with true blue and white; *S. compacta*, at that early season, being a deep reddish pink, and *pendula* being also deeper in colour at that season, rising not higher than the *Nemophilas*, while *compacta* is rather higher, say from twelve to fifteen inches. Moreover, *Silene pendula*, when sown in April, will flower from June till overtaken by the frost, and yet you can hardly see it any where; it forms the best pink edging, as it bears clipping like the sweet *Alyssum*, the

Virginian Stock, and *Sanvitalia procumbens*, all excellent plants for edgings. Indeed, with the exception of the *Leptosiphon densiflorus*, when you catch it in its prime, there is not a plant which makes a neater bed than *Sanvitalia*, which blooms from the 1st of June to the end of November. For yellow colours there are *Callichroa platyglossa*, *Bartonia aurea*, and *Oxyura chrysanthemoides*, all three differing little in height (one and a half foot); they also come into flower by the end of April, and although their foliage is rather weedy, it is well hidden with the profusion of their rich coloured flowers, which last six weeks. Then for a taller bed of yellow, there is *Erysimum Peroffskianum*, which contrasts beautifully in size and colour with the blue branching *Larkspur*. I have not yet tried if *Sphenogyne speciosa* will stand the winter; I wish some one who has would let me know. Whilst it lasts in bloom it is the finest thing we have, to say nothing of the *Clarkias*, *Collinsias*, *Godetias*, &c., which make such a rich appearance in the latter end of April, through May, and the greater part of June, or, in other words, during the dreary season of the English flower gardens.

ARTIFICIAL GLAZING.—As a covering for flowers, &c., nothing can be better than the varnish or solution of caoutchouc, spread with a clean brush upon fine holland, not calico. When the linen is properly strained upon frames, it is as tight as a drum-head, and is no contemptible substitute for glass; indeed, its chastened light renders it sometimes preferable.

SOWING MIGNIONETTE FOR BLOOMING IN POTS THROUGH THE WINTER AND SPRING.—To insure success, the pots must be clean, and well drained; the compost used should consist of three parts good mellow sandy loam, to which one part of decomposed leaf-mould may be added. Fill the pots quite full of soil, and make it rather solid, so as not to allow much room for subsiding; for as the young plants are rather impatient of too much moisture, it is as well to have them so placed as not to be susceptible of injury while very small from careless watering. The plants must not be allowed to become crowded in the pots; for it is better to thin them several different times, leaving about six plants to bloom in a forty-eight sized pot, than to take too many out at one time. Through the winter the proper treatment is to secure them against frost—to keep the soil moderately moist, but not wet—and to give them all the air possible at all favourable times, but always to guard them against cold cutting winds or rain. A few small plants, potted now from the open borders, will bloom in November; those sown now will succeed them in January, and a few more pots sown towards the end of the month will give a succession as long as bloom is wanted in pots in the spring.

AGARICS.—There is this most remarkable

fact connected with the qualities of the Agarics, or Mushrooms; a fact which seems to show that their properties depend upon climate and situation and accidental circumstances, rather than upon specific peculiarities. Those kinds which are wholesome in one country are not so in another; thus, in Great Britain, the common Mushroom (*Agaricus campestris*), the Fairy Ring Agaric (*A. pratensis*), and the *A. Georgii*, are the only sorts that it is quite safe to eat; while the Fly Agaric (*A. muscarius*), and *A. virosus* are extremely poisonous, but in other countries of Europe it is different. In France, in Italy, and especially in Russia, a usual aliment is afforded by a great variety of species, which, although very common in this country, it would be extremely dangerous to eat; and, on the other hand, even the dangerous *A. muscarius* is a species of food in Kamschatka.

HERNE'S OAK.

I AM a monthly purchaser of the *GARDENER AND PRACTICAL FLORIST*, which I highly approve of. In reading the August Part, my attention has been attracted to an article on Herne's Oak, page 196. I cannot quite make out from that article whether or not you believe Mr. Jesse's statement; I for one, having gone into the question, do not.

In order to enable you to come to an honest decision on this point, which I hope you will communicate to your readers in a future article, allow me to refer you to two articles on the subject in the *GENTLEMAN'S MAGAZINE*, New Series, vol. xv., Nos. 4 and 6, April and June, 1841. The *NEW SATURDAY MAGAZINE* having in olden days promulgated Mr. Jesse's story, thought it but just and right, some Number after June, 1841, to state that, in a careful perusal of the evidence contained in the articles in the *GENTLEMAN'S MAGAZINE*, it felt compelled to reverse its decision, and to refuse its assent to Mr. Jesse's statement. I took some part in collecting the evidence for the first article in the *GENTLEMAN'S MAGAZINE*, being a grandson of one of the most authentic witnesses. My only wish is to bring the truth to light on this subject.

Yours, &c.,

A CLERGYMAN.

Since the receipt of the above we have had the following, which corrects an oversight, and gives us an opportunity of completing our subject.

August 17, 1843.

"After I had posted my letter to-day, I had the opportunity of referring to the *SATURDAY MAGAZINE*, when, failing to find the article I had expected, I turned to the *PENNY MAGAZINE*, where, in Part 16, page 156, April 23rd, 1842, in the New Series, I found the article to which I alluded. I am perhaps wrong in

stating that they had previously given credence to Mr. Jesse, though right in saying that they sum up and decide against him.

"Apologising for troubling you again, believe me your Obedient Servant,

A CLERGYMAN."

We cannot do better than give the following extract from the work alluded to, for there seems to be a good deal of sound reasoning, and the evidence is pretty conclusive.

"According to Mr. West's account, the king had directed all the trees in the park to be numbered; and upon the representation of the bailiff, whose name was Robinson, that certain trees encumbered the ground, directions were given to fell those trees, and Herne's Oak was amongst the condemned. Mr. West, who was residing at Windsor at the time, traced this oak to the spot where it was conveyed, and obtained a large piece of one of its knotty arms, which Mr. Delamotte has often seen. Mr. Ralph West, however, the eldest son of the President, who as a youth was distinguished for his love of art and his great skill as a draftsman, made a drawing of this tree before it was felled, and Mr. Delamotte's drawing was a copy of this sketch.

"In Mr. Knight's editions of Shakspeare will be found other versions of the belief that the tree known by tradition as Herne's Oak no longer existed. One relation is, that George III. had told Lady Ely that Herne's Oak was cut down, amongst a number of what was called unsightly trees, when he was a very young man. Another version of the popular belief is, that the tree was blown down some sixty years ago; and this is given in Mr. Knight's 'Library Edition,' in an extract of an account furnished by the son of an old resident at Windsor, who is still alive:—My father states that about sixty-four years since there was a deep chalk-pit sunk inside the park at Windsor, nearly opposite the Hope Inn (which is now nearly filled up again, and through which the road to Datchet now runs). The chalk was taken in immense quantities from this pit to fill up the ditch which then ran round the Castle, it being considered it would render the foundation of the Castle and connected buildings more secure, as in many places they were giving way. The removal of the chalk from the pit for this purpose in some measure undermined a fine oak-tree, which stood on the upper side of the pit nearest the Castle. Shortly after a storm came and blew this tree down, and this circumstance created a great sensation at the time, as that tree was considered to be the identical Herne's Oak of Shakspeare notoriety. My father had in his boyish days very frequently played in the pit and round the tree; and its locality is therefore strongly impressed on his memory, although now between sixty and seventy years since. Mr. Emlyn was architect and superin-

tendent of the works at the Castle at that time:—He had the fallen tree removed to his yard, where it was cut up.' Our informant adds, that a piece of the oak was made into the stock of a gun, and given to a person 'who, not being aware of its value as a relic, sold the gun some years since to a farmer to scare crows with.' The letter then concludes thus: 'My father wishes me to add, that it must not be inferred that there was no pit existing *previous* to the removal of the chalk for the purpose stated. There was before then such a pit as described in Act V., Scene 3, where Mrs. Page says—

'They are all couched in a pit hard by Herne's Oak.'

"In Mr. Jesse's second series of 'Gleanings in Natural History,' published in 1834, it was mentioned that the real Herne's Oak was still existing; that it was 'close to an avenue of elms,' near the footpath leading from Windsor to Datchet; that it was not cut down, as some people had affirmed. In 1838 the following passage appeared in the 'Quarterly Review':—

"Among his anecdotes of celebrated English oaks, we were surprised to find Mr. Loudon adopting (at least, so we understand him) an apocryphal story about Herne's Oak, given in the lively pages of Mr. Jesse's 'Gleanings.' That gentleman, if he had taken any trouble, might have ascertained that the tree in question was cut down one morning by order of King George III., when in a state of great, but transient excitement. The circumstance caused much regret and astonishment at the time, and was commented on in the newspapers. The oak which Mr. Jesse would decorate with Shaksperian honours stands at a considerable distance from the real Simon Pure. Every old woman in Windsor knows all about the facts."

"Mr. Jesse replied to this statement of the 'Quarterly Review,' in a letter addressed to the editor of the Times. From this time the existence or non-existence of Herne's Oak has been a subject of controversy. The arguments on either side are given in Mr. Knight's 'Shakspeare,' from which we copy the following details:—

"The memory of the editor carries him back to Windsor as it was forty years ago. The Castle was then almost uninhabited. The King and his family lived in an ugly barrack-looking building, called the Queen's Lodge, which stood opposite the south front of the Castle. The great quadrangle, the terrace, and every part of the Home Park, was a free playground for the boys of Windsor. The path to Datchet passed immediately under the south terrace, direct from west to east, and it abruptly descended into the Lower Park at a place called Dodd's Hill. From this path several paths diverged in a south-easterly direction towards the dairy at Frogmore; and one of these went close by a little dell, in which long rank grass and fern,

and low thorn, grew in profusion. Near this dell stood several venerable oaks. Our earliest recollections associate this place with birds'-nests and mushrooms; but some five or six years later we came to look here for the 'oak with great ragged horns,' to which we had been introduced in the newly discovered world of Shakspeare. There was an oak, whose upper branches were much decayed, standing some thirty or forty yards from the deep side of the dell; and there was another oak, with fewer branches, whose top was also bare, standing in the line of the avenue near the back wall. We have heard each of these oaks called Herne's Oak; but the application of the name to the oak in the avenue is certainly more recent. That tree, as we first recollected it, had not its trunk bare. Its dimensions were comparatively small, and it seemed to us to have no pretensions to the honour which it occasionally received. The old people, however, used to say that Herne's Oak was cut down or blown down, and certainly our own impressions were that Herne's Oak was gone. One thing, however, consoled us. The little dell was assuredly "the pit hard by Herne's Oak," in which Anne Page and her troop of fairies "couched with obscured lights." And so we for ever associated this dell with Shakspeare.

"The oak which Mr. Jesse calls Herne's is now perfectly bare down to the very roots. 'In this state,' says Mr. Jesse, 'it has been, probably, long before the recollection of the oldest persons living.' He adds, 'it has always been protected by a strong fence round it.' In our own recollection this tree was unprotected by any fence, and its upper part only was withered and without bark. So far from Herne the hunter having blasted it, it appears to have suffered a premature decay within the last twenty years. This tree is of small girth compared with other trees about it. It is not more than fifteen feet in circumference at the largest part, while there is a magnificent oak at about two hundred yards distance whose girth is nearly thirty feet.

"The doubts which naturally belong to this question are, we apprehend, sufficiently cogent to render it a somewhat bold act for the authorities connected with the park to have recently put up a board on Mr. Jesse's favourite tree in the avenue, bearing this inscription:—

"There is an old tale goes that Herne the hunter,
Sometime a keeper here in Windsor forest,
Doth all the winter-time, at full midnight,
Walk round about *this* oak;."

The subject has been recently investigated with great acuteness by Dr. Bromet; and his conclusions are given in a very interesting letter in the 'Gentleman's Magazine' for April, 1841. He has collected a variety of testimony from living persons, which goes to prove that a tree

called Herne's Oak was cut down some sixty years ago, and that the tree which now pretends to the honour—"this oak"—had acquired the name in very modern times:—"its present name was not conferred upon it until some time after the demolition of another old tree formerly possessing that title." This entirely agrees with our own personal recollections of the talk of Windsor about Herne's Oak. But Dr. Bromet justly observes that the 'strongest proof' against the claims of Mr. Jesse's oak is "Collier's map of 1742, which actually points out 'Sir John Falstaff's oak' as being *not in the present avenue, but outside it, near the edge of the pit*." Mr. Collier 'was a resident in the immediate vicinity of the tree he thus distinguishes;' and his map is therefore an indisputable 'record of its locality a hundred years ago.' So far, we think, the proof is absolute that the oak in the avenue is *not* Herne's Oak. It was not, as we believe, so called by general tradition even in very recent times: it certainly was not so called in Collier's 'Plan of Windsor Little Park,' in 1742, in which plan another tree, standing some yards away from the avenue, is remarkable enough to bear the name of Sir John Falstaff's oak.

ROTATIONS OF VEGETABLES SUITED TO COTTAGE GARDENS.

THOUGH the Cottage Garden may not require all the vegetables found in those of the affluent, yet it will require some; and it is good economy to have such as may be useful and of easy cultivation. For the Cottager's more particular practice, therefore, I will submit a few rotatory crops of vegetables; and in doing so I would be very unwilling to bring forward any theory or practice that would be unprofitable, and in the end vexatious.

I. At the time and in the manner mentioned in this work, sow the seeds of Early York, Wellington or Nonpareil Cabbages: they will, if properly attended to, be fit to put out in November, and fit for use, and may be cut, at May. Sow alternate drills of the seeds of Lettuce, Aberdeen and Stone Turnips in their place. [The Stone Turnip may be again replaced by any one of the before mentioned Cabbages at November.] Sow the seeds of Cos Lettuce in March, and have the plants ready to put out between the drills of Turnips, and they will grow well in company.

II. Any of the Cabbages mentioned in No. 1, and treated as before described, will be off at May. They can be replaced by any one of the same Cabbages, the seeds of which should be sown the March previously; the plants will be fit to put out at May, and be Cabbaged in August. They can be succeeded by the plants of any of the Kails or Rape, the seeds of which

* Shakspeare wrote "*still* midnight," and "*an* oak."

should be sown at May, so as to have the plants fit to put out at August. Drills of Cos Lettuce can be taken from between them, as directed in No. 1.

III. In February and March sow drills of Peas and Beans, and put out any of the Cabbages mentioned in No. 1 between them, the plants of which have stood over from autumn sowing, in the seed bed, and may succeed by Cabbages, Turnips, or Peas and Beans.

IV. In March sow alternate drills of Parsnips, Carrots, and Onions. These will occupy the ground the better part of the season, at least the two former will; the latter will be off in August; the Parsnips and Carrots, not till October. Sow the seeds of Cos Lettuce in March, and have the plants ready to put out between the drills; the Lettuce can be pulled away in June. Have the plants of Borecole, or any other of the Kails, ready to replace the before mentioned crops, the seeds of which should have been sown at March.

V. Early Potatoes are considered a great luxury to the rich, but they prove highly valuable to the poor. Where a plot of early Potatoes has been dug out in July, they may be replaced by Stone or Norfolk Turnips, or by the plants of Borecole, or any other of the Kails.

The vegetables mentioned in the foregoing are truly valuable and useful in household economy, and will add considerably to the comfort of the Cottager, and at the same time the cultivation of them will not much increase his expenditure, as they are moderate and easily cultivated.

I have not mentioned Flat Dutch or Drum Head Cabbages, though they are much in use, for the reason that they occupy the ground for too long a period. We might have two crops of York Cabbage for one of Flat Dutch.

Borders of Cress and Parsley are not only ornamental but useful.

A few drills of Leeks are advisable.

Where there is a stock of Bees, drills of Thyme, Savory, Marjoram, and Basil will prove highly remunerative.

In the Cottage Garden medicinal herbs should be cultivated; the space they occupy is small, and their utility very great. I will instance, Garlic, Camomile, Fennel, Comfrey, Rosemary, Sage, Anise, Carraway, Rue, &c. &c.

There seems to me to be an imperative necessity on the Cottager to cultivate and attend to his garden, be the space small or extended. He cannot purchase, and it is therefore culpable for him to be without the garden produce. It is surprising what a large quantity of vegetables can be raised off a small space of ground when judiciously cropped; manure is a most necessary auxiliary. I advise that a heap be carefully collected, and set apart in a convenient place for the use of the garden, and that the seedling beds be at all necessary times supplied with plants,

so that when a crop is removed it may be replaced.

By due attention to the foregoing hints, many of the necessities and comforts of life can be enjoyed, and the domestic animals under the care of the Cottager will fare sumptuously.—*Vegetable Garden.*

THE PRIVET—AND PRIVET HEDGES.

SOME years ago, it was recommended to introduce the privet (*Ligustrum vulgare sempervirens*) into the woods and plantations, with a view of producing a supply of food for pheasants during the winter months. On an estate in the south-west of Bucks, whence the writer dates his epistle, the plan was extensively adopted, and the success was such as to answer the utmost expectations which were entertained. But the privets continued to grow, and from mere bushes they in a few years formed themselves into complete thickets, which were found to impede rather than forward the object for which they were at first planted: it was therefore deemed necessary to remove one-half the trees. In so doing, it became an object of moment to preserve, and at the same time, to turn them to the best account; therefore, as the proprietor was, and is, in the general practice of annually increasing the wood ground, he soon experienced the great advantage derivable from the removed trees, in *immediately forming hedges* round the young plantations. The *subsoil* is chalky, and the trees are lifted from the woods with the greatest facility, the balls of the roots unimpaired. All the preparation required is to form an embankment around the young plantation intended to be inclosed, just in the manner practised in raising a quick-set hedge. Each tree is placed according to its size, at a suitable distance from its neighbour; it is then plashed near the bottom, in a way similar to that practised with old hawthorn hedges. Instead, however, of bending the branch *from* the cut made in its base, after the ordinary method, so as to extend and enlarge it, *the stem of the privet is inclined towards and over the cut*, thus making the entire side of the shoot a defensive covering to the incision, which thus is closed, and in a great degree protected from wet and the drying action of the atmosphere. It must be clear to every naturalist, that if the operation be adroitly performed, it will, by the above method, be made to effect the intended object,—that is, to cause the development of abundance of new shoots from pre-organised germs or buds, while it tends to heal the wound inflicted by the bill-hook. The success proves the correctness of the practice, as may be seen by the following quotation.—“We pursue the above system annually, and have been much gratified at seeing the fine hedges which it produces in the *ensuing summer*—hedges as good as if they had been of many years standing.” It

is observed, that to plant quickset hedges, would be a perfectly vain attempt, as rabbits are very abundant; and they are known to destroy the young quick by barking it all round. But rabbits refuse the privet, and therefore every plant escapes from that too common cause of misfortune.

Such is a faithful report of the communication made to me, and I earnestly hope that it may be found available by many, thereby leading to the greatly extended cultivation of a shrub that is all but an evergreen. I close my notice with a few lines on the natural history of the plant.

The evergreen variety of *Ligustrum vulgare*, appears to be a native of Italy, introduced near the close of the last century. The genus is a family of the olive tribe (order, *Olcinæ*) of the natural system of botany; and it belongs to the second class, first order of Linnaeus. The stamens are two; there is one pistillum, the corolla is cut into four segments, and the germ becomes a berry, black in colour when ripe, and containing four seeds. "In its cultivated state it is always an evergreen, found wild in woods and hedges, is generally deciduous. Sometimes the leaves grow by threes, are enlarged at the base, and variegated.

AGRICOLA.

IMPROVEMENT OF SMALL PASTURES.

THE general improvement of agriculture in the large way, and the introduction of chemical science, as a powerful auxiliary, have of late occupied the attention of many wise and good individuals, whose efforts will never, I trust, be relaxed, till a new order of management supersedes the ignorant adherence to routine which has left the agriculturists, as a body, a century in arrear of the manufacturers. But there is a class of persons who, though they cannot rank as farmers, and are not in a situation to take interest in the advance of science, depend upon the product of the soil for a great part of their comfort and support. Such are those who with limited incomes occupy small tenements in the country—cottages with a garden and paddock: in a word, "all who are obliged to be rigid economists, and to make the most of their means." A cow is, perhaps, one of the greatest treasures that an industrious cottager can possess, and it is astonishing how much real profit may be derived from one, if its owner understands his business; but food must be provided, and to turn a small meadow or orchard piece, with a few trees in it, to the best account, is an affair of no small consequence. I have witnessed what may be done towards the support of a cow (which made the most ample return, by a large supply of milk, cream, and butter,) with a piece of grass land, scarcely half-an-acre in extent, and therefore am prepared to speak experi-

mentally. The field I allude to was, seven years since, an orchard, containing several old trees, under the shade of which the grass became of a coarse and valueless character. By degrees, the worst of the trees were removed, the holes filled up, and the surface rendered as even as possible. It has subsequently been treated in the following manner:—In the dry weather of March the grass has been raked over with iron rakes, for the piece being small, this has been practicable; and raking is more effectual than bush-harrowing in clearing off dead herbage and slightly raising the surface of the soil, thus preparing it for the reception of a sprinkling of the true Dutch white clover. One pound, or a pound and a-half of this seed was found sufficient; it was applied annually, and at length a very fine bottom of clover was obtained. After sowing, the piece was carefully rolled. On one occasion a few grass seeds were added, chiefly of *solum perenne* (rye grass), as no other could then be obtained. In lieu of this, the cock's-foot grass (*dactylis glomerata*) would be most beneficial. The seed ripens in July, and it is strange that country seedsmen rarely keep it. After rolling, a few barrow-loads of fresh maiden loam, scattered over the surface, have always been productive of manifest advantage.

A proper manuring of the land is the next object of importance; this should always be given late in October or in November; and any decomposable matters will effect the object. Twice, with an interval of three years, *old night soil* was used, to the extent of twelve or fourteen barrows: but frequently loamy soil with a small proportion of coal-soot, common salt, and wood ashes, formed the manure. The winter rains washed down the finer and solable substances, and thus prepared the herbage for its first spring starting; and whatever literary matters remained, were cleared off at the time of raking. These were the points chiefly attended to for the improvement of the small piece of meadow, and the results were most satisfactory. The object in view, and that which I would recommend to every cottager, is the feeding of the cow in the stall or yard, (a practice which bears the singular application of *soiling*,) but *never in the field!* "A cow thrives best upon good natural grass or hay, but where there is but half an acre of meadow, it will be impossible to derive her whole support from so small a piece of land; and were she to be pastured upon it, *she would trample down and spoil three-fourths* of the entire herb in less than a week." I retain the opinion which I thus expressed, some years ago, and I now add, that a small field may be so improved by moderate autumnal manurings, (chiefly of good loam, salt, and soot,) by close shutting up during winter—unless, indeed, a few sheep graze it in January—by raking, sowing, and rolling in March, that, if a showery spring supervene, the grass may be cut over

three times between the third week of April and the first of July. On one occasion (1832), the grass of the meadow described was so luxuriant, that about mid-July half of it was of necessity, cut down for hay.

I will speedily notice the auxiliaries of the meadow for winter food: at present it must suffice to observe that whatever be the merits or demerits of *old pastures*, in an agricultural point of view, the paddock of the cottager *may*, by wisdom and assiduity, be rendered a source of much emolument.

AGRICOLA.

CULTIVATION OF THE CUCUMBER IN POTS.

I REGRET that I have so long delayed to introduce a subject which may prove very interesting and advantageous to the amateur; however, it is not too late, and the directions will be strictly practical, being the results of my own experiments in the spring of last year.

Cucumbers, it is well known, may be grown in pots, in a common frame, over a dung-bed; but this method has no peculiar merit. The culture *in the stove*, without any bottom heat, is that to which these observations will be confined; and whatever difficulties or embarrassments it may be attended with, it will be satisfactory to the reader to know, that I saw in May, 1836, a range of pots on the back curb of a pine stove, and another on a shelf of the back wall, with small low plants, which had then yielded an uninterrupted supply of beautiful fruit for several months, and remained highly productive. The heat maintained by the gardener was, I think, very high—perhaps never less than seventy degrees by fire, and sometimes 100 degrees by sun, the moist atmosphere which the pine delights in was propitious to the cucumber. I indulged my plants with no such privilege; they had to endure abundance of hardships, but enjoyed some advantages which those grown by the skilful gardener alluded to did not possess; for instance, the plants were not only placed in pots, sixteen inches deep, containing three-fourths of a bushel of soil, but these pots were plunged to the half of their depth in the mould of a trough six feet long, a foot or more deep, and about fifteen inches wide. The plants were suffered to produce a long stem, and then to branch off, along trellis-wires, nine inches from the lights; whereas, those which I inspected, were planted in pots far less deep, and had no other pasture than that of the soil contained therein: they did not run to any extent, and were kept short and “stocky,” by constant stopping. These facts will give the grower considerable latitude, and he may assure himself of complete success, if common attention be paid to heat, air, shade in brilliant sunshine, and watering over the soil, so as to render it equally moist, but not *wet*.

We will suppose a low pine stove at work now, at the average temperature of sixty-two—sixty-five degrees; and that a trough may be made close to the back wall, about six feet from the glass. This can be easily contrived, and the situation is extremely desirable, as the plants may be trained up props near the wall, and will not interfere with any other thing.

The seed is of consequence—mine was a variety which proved extremely prolific, juicy, and good flavoured. I had the pleasure to send a pretty fair specimen to the editor of the *Gardeners' Gazette*, which measured seventeen and a half inches long, and seven and a half in the girth. From the same plant I subsequently grew one for seed which was twenty-five inches long, and about nine in the girth, straight, and of very equal breadth. From this fruit I now have a few plants showing their second rough leaf. I received the seeds originally from Welbeck, with the odd title of *Walker's Prize-fighter*. The prickles are white, the bloom very fine; it was well known in Yorkshire some time ago, but may not be so now. Every one, however, must choose for himself, and young plants may yet be raised in very small pots (one in each), of rich light earth, or in heath mould. Some would prefer to sow in a seed pan, and transplant just as the first rough leaf becomes visible. Each pot should have a little fine hay or moss round its side, to hold the fibrous roots together, that the ball may come out in a compact state, though perhaps Mr. Knight's practice with melons would be preferable, namely, to net a pot with hay, of the size large forty-eight, the bottom of which has been entirely broken out; thus obviating the necessity of any shifting, as the roots will free egress through the day below the soil. A little bottom heat, either that of the pine-bed or of a warm dung-frame, will be desirable, till the first ball be completely formed, after which the plants may go at once into their fruiting pots. My next will elucidate every thing now left unexplained. It only is required to say that I raised my plants by the means of a bed of earth, warmed to seventy-five degrees, by the action of a flue, which bound one end of the fixed brick troughs, that are in a small propagating stove. The work is very simple, and requires merely a little experience.

ON MANURES, THEIR USE AND ABUSE.

BY CUTHBERT W. JOHNSON, ESQ.

SALT.—Mr. Rust, of Ponsbourn Park, in Hertfordshire, thus advises:

“An opportunity should be selected in applying the salt when the weather is mild and moist, but not rainy—when the land is damp, but not wet, and salt should never be sown when the sun is shining, but either early in the morning before it rises, or late in the evening after it has set.

"Late hours we have always chosen, and employing our ploughmen or other constant labourers, have got the work performed with small additional wages, without interrupting at all other business on the farm.

"They sow the salt out of the ordinary seed basket, at the rate of about four or five bushels per acre.

"Ten or twelve men moving at once get over a large piece of ground in one evening, and are easily instructed so as to proceed with regularity and dispatch, by a little care on the part of the superintendent.

"In the morning *each throw may be distinguished by the quantity of slime and number of dead slugs lying on the ground.*

"The finer the grain, and the drier the salt is, the better—what we have used has been procured from town, at about tenpence per bushel, which brings the expense, with carriage and spreading, to about six or seven shillings per acre.

"The positive advantages I cannot state accurately in figures, but I am confident it has in every instance been very considerable, and in some fields it has certainly *been the means of preventing the total destruction of the crop.*

"I have applied salt in the course of two seasons as a top dressing to 200 acres of wheat."

ELECTRICITY AND METEOROLOGY AS CONNECTED WITH VEGETATION.

WHOEVER possesses, or has the opportunity to inspect, the work which bears the above title, can readily satisfy himself, that at page 6 of the preface there is the following passage:—

"The late Professor Playfair once observed, 'if we consider how many different laws seem to regulate the action of impulse, cohesion, and elasticity, chemical affinity, crystallization, heat, light, magnetism, electricity, galvanism, the existence of a *principal more general than these*, and connecting all of them with that of *gravitation*, appears highly probable. The discovery of this great principle may be an honour reserved for a future age; and science may again have to record names which are to stand on the same levels with those of Newton and Laplace; it were unwise to be sanguine, and unphilosophical to despair.'

"The conjecture of this great man has, to a certain extent, been verified; and it may not be presumptuous to conjecture, that 'the great principle' itself will ultimately be referred to one grand and only source. I believe that this source is *already* discovered and known, and that it only requires the philosophic mind to divest itself of prejudice, and to cease from pursuing shadows, since the substance itself stands revealed to the view of all."

With this grand principle in view, I appeared before the public in 1830. Every day, during the intervening period of near eight years, those facts and convictions to which the almost prophetic remark, (made in one of his *last lectures*) gave origin, have been more profoundly impressed upon my mind. I am now called upon, at this period of the rapid progress of electrical science, to enter somewhat at large upon this all important investigation; but, in the first place, a sense of justice requires that I advert particularly to a subject of great and *seasonable* interest.

The extraordinary asperity of the frost has afforded matter of much speculation, particularly as it has been coincident with the appearance of a new Weather Almanac, by Mr. P. Murphy, which, from whatever cause, has already run into its thirteenth edition. Every one must be aware how essentially different are the assumptions of ignorance, based upon superstition and the credulity of the multitude, and the modest, unassuming calculations of true science. Whatever be the qualifications of Mr. Murphy, be he a man of reading, of reflection, and one devoted to experimental philosophy, or just the reverse of all these, certain it is that he bases the whole of his theory, and all its results, upon the *science of meteorology*, which, "considered in its collective relations, may be said to embrace the entire phenomena of nature in the physical world." Now, a writer who steps forward to throw light upon some of the most mysterious and abstruse questions of physical science, who appeals to the late magnificent discoveries of a Faraday, who declares that "were it not for the advances in experimental philosophy which have been made of late years, more particularly as connected with those mysterious forces, *electricity* and *magnetism*, in at once exhibiting the extent of their agency in nature, and the laws by which they are governed in their relations, and the numerous aids to enquiry thence derived, it were equally futile at present, as at a former time, to hope that human industry, however great, could, in so unequal a trial, have triumphed over the otherwise insurmountable difficulties opposed to it." Such a man, I assert, ought to be heard impartially! Let him and his theory be brought to the utmost test of inquiry; let him and it be weighed by the balance of experimental truth, till they be "found wanting"—if that be their final lot; but at all events let him have a fair trial. I have been led to these preliminary observations by perusing the article on "Metallurgy and the Weather Prophes," at page 61 of the *Gardeners' Gazette*, No. 56, Jan. 27, 1838. I object not to the leading remarks, nor to the standard of comparison erected by the writer. I find the table of the barometrical indications correct, inasmuch as they agree with those of my own instrument so nearly, that with

few exceptions, each day's *mean* altitude exceeds that in my diary by about one-tenth of an inch only. The register of the winds, and of the actual daily state of the weather—making due allowance for difference of locality—are nearly identical. But what can be said of the column of *Thermometrical*, mean altitudes? That column—that register of temperature, by an *officer* of a scientific body, collected by three diurnal observations with the "Meteorological Society's *standard* instruments?" The answer is simply this—that *if* the figures, as printed in the column referred to, be those of the degree indicated by the Society's thermometer, that instrument is false, or there has not been one single day of frost in Hatton Garden throughout the course of January instant! In proof of this assertion, I copy the figures of my diary for every day, to the morning of the 30th inclusive.

JANUARY, 1838. STATE OF THE THERMOMETER.

| Day | 9 a.m. | 1 p.m. | 10 p.m. | max. of frost. | Day | 9 a.m. | 1 p.m. | 10 p.m. | max. of frost. |
|-----|--------|--------|---------|----------------|-----|--------|--------|---------|----------------|
| 1 | 42 | 43 | 37 | rain | 16 | 20 | 26 | 16 | 16 |
| 2 | 36 | 42 | 41 | do. | 17 | 23 | 31 | 23 | 10 |
| 3 | 36 | 40 | 27 | 5° of frost. | 18 | 20 | 30 | 16 | 16 |
| 4 | 26 | — | 30 | 6 | 19 | 16 | 16 | 6 | 26 |
| 5 | 24 | 30 | 22 | 10 | 20 | 3 min | 15 | 14 | 34 |
| 6 | 23 | 30 | 30 | 9 | 21 | 22 | 28 | 31 | 10 |
| 7 | 30 | 30 | 30 | 2 | 22 | 40 | 42 | 39 | thaw. |
| 8 | 24 | 26 | 20 | 12 | 23 | 32 | 32 | 27 | 5° frost. |
| 9 | 16 | 20 | 18 | 16 | 24 | 18 | 30 | 18 | 14 |
| 10 | 16 | 24 | 12 | 20 | 25 | 31 | 25 | 22 | 11 |
| 11 | 19 | 26 | 18 | 14 | 26 | 32 | 24 | 22 | 10 |
| 12 | 16 | 30 | 8 | 24 | 27 | 34 | 26 | 24 | 8 |
| 13 | 15 | 20 | 18 | 17 | 28 | 34 | 30 | 28 | 8 |
| 14 | 18 | 20 | 8 | 24 | 29 | 34 | 44 | 35 | thaw moist. |
| 15 | 8 | 24 | 12 | 29 | 30 | 34 | — | — | haze. |

The foregoing are in round numbers, being quite sufficient to indicate the averages in one locality, thirty miles due west of London.

I am aware, that near Henley—on high ground, the lowest recession of the mercury was to three degrees (twenty-nine of frost), and at a similar distance from me to the north-east—the temperature has consistently been above that indicated by my instrument. On the other hand, at Newbury, to the west, we are told of six below zero. These facts, however discrepant, afford ample proof that *all* localities have not been favoured with that total exemption from *frost* which has distinguished the happy, genial climate of Hatton Garden!

The grand feature of Murphy's Theory, is the view it takes of the agency of *Magnetism*: how far he has been anticipated in an electrical hypothesis, it remains for me to point out. But, be this as it may, it should appear that when divine wisdom designs to convey the knowledge of some sublime truth, it permits a ray of light to illumine the minds of several individuals simultaneously. This fact should teach us humility as well as candour: it should instruct us that two minds, which possess no means of intercommunication, may be made instruments for the diffusion of knowledge. The pride of ignorance—of science falsely so called—will for a time attempt to throw scorn upon the "*lu-*

natic" effusions; but truth and experience will effectually separate the chaff from the wheat.

I. T.

NATURAL HISTORY OF THE PERSIAN MELON.

ORIGINAL.

I PROPOSE to confine my remarks to the two varieties of the *Housaince*-melons, which were hardly known in England, till Mr. Knight undertook their culture about seven years since, and detailed his experiments in the *Transactions* of the Horticultural Society. Many persons, however, may wish to produce other species, as for instance—the large *Gerinek*, a prolific bearer, of a very rich fruit; the sweet *melon* of *Ispahan*, a plant of difficult culture, which produces a fruit ten or twelve inches long, approaching in figure to a bulky cucumber. In order, therefore, to leave no point unnoticed which may be interesting, it will be proper to extract a few paragraphs from *Lindley's Guide to the Orchard*, &c., prior to entering upon the details of culture, as, thereby, the reader may be enabled to adapt his machinery to the object in view.

The quality of the fruit has already been alluded to; of their habits, Lindley says, that "they are found to require very high temperature, a dry atmosphere, and an extremely humid soil, while they are at the same time impatient of an undue supply of moisture, which causes spotting and sudden decay, long before the fruit is matured. It is not, therefore, easy to maintain that necessary balance of heat and moisture, which in Persia arises out of the very nature of the climate and mode of cultivation. In that country, we are told that the melon is grown in open fields *intersected* in every *direction* by *small streams*, between which lie elevated beds richly manured with pigeons' dung. Upon these beds the melons are planted. The Persian gardener has, therefore, to guard against nothing but a scarcity of water, the rest is provided by his own favourable climate. With us, the atmosphere, the ventilation, the water, and the heat, are all artificial agents, operating in opposition to each other."

The fact of the irrigation by running streams connected with the discovery which I made of the avidity with which the roots seek water, and revel in it, whenever they find access to it, led me to communicate those circumstances, which were published five or six years since, in the "*Transactions of the Society*." But while there can exist no doubt of the eagerness with which the remote fibres imbibe the pure element, it is no less certain that a bed of earth made wet with waterings becomes injurious to the stems and larger roots. Great heat, that is, 65 deg. to 70 deg. as a day minimum, is propitious; but it should be borne in mind that the *nights*

in Persia, are often acutely cold. High solar heat, even to 100 deg., will do good, provided that the extreme roots can find a stream or regular supply of water, but the plant is not tender; in fact, I by accident scattered some seeds of the Ispahan on an open border, and in a few days found a number of little healthy plants, which grew and retained a rich verdure through the cold, chilly nights of September.

When Mr. Knight's observations shall be detailed, and the structure of his melon houses described, there will be abundant data before the readers of the *Gazette*, whence to form a pretty accurate idea of the machinery required. In the mean time, I will shortly observe, that the plants differ considerably in appearance from those of ordinary melons: the leaves in general, are larger; those of the pink-fleshed *Housaince* are sometimes eight or nine inches across. The blossoms are male and female, on the same plant, that is—like all the plants of the melon tribe—they are *monœcious*; but in size and colour, the flowers of several varieties of the Persians are far smaller, and much paler than those of the common melons. The fruit rarely emits any odour as it ripens; and therefore, the criterion which indicates maturity is an oozing of minute globules of a clear fluid around the base of the foot-stalk, near its junction with the fruit; and this is very sweet to the taste.

The Persian varieties ought to be kept pure, individually; one sort only being cultivated in the same house or pit. But whether artificial impregnation be required or not is doubtful; in many female blossoms there exist the rudiments of anthers; and these, if I mistake not, have been seen to produce a powder or dust similar—in appearance at least—to true pollen.

The plants of the first sowing, ought not to be progressing, and might be a foot or more high, though the bitter weather is very adverse to them. In a month or two, cuttings under a joint, will strike root freely in a phial of water, or in a light soil, assisted by a little bottom heat, in a close frame.—April 21.

GLEANINGS AND MEMORANDUMS.

SENTRY CATS.—Robert Brook, Esq., of Merton Lodge, near Woodbridge, has four or five cats, each with a collar, and light chain and swivel, about a yard long, with a large iron ring at the end. As soon as the gooseberries, currants, and raspberries, begin to ripen, a small stake is driven into the ground or bed, near the trees to be protected, leaving about a yard and a half of the stake above ground; the ring is slipped over the head of the stake, and the cat, thus tethered in sight of the trees, no birds will approach them. Cherry trees and wall-fruit trees are protected in the same manner as they successively ripen. Each cat, by way way of a shed, has one of the largest sized flower-pots

laid on its side, within the reach of its chain, with a little hay or straw in bad weather, and her food and water placed near her. In confirmation of the above statement it may be added, that a wall of vines, between two hundred and three hundred yards long, in the nursery of Mr. Kirke, at Brompton, the fruit of which in all previous seasons, has been very much injured by birds, was, in 1831, completely protected in consequence of a cat having voluntarily placed himself sentry upon it.—*Trans. Hor. Society.*

ACACIA.—The flowers of a species of the *Acacia* are used by the Chinese in making that yellow which bears washing in their silks and stuffs, and appears with so much elegance in their paintings on paper. They gather the flowers before they are quite open, and put them into a clean earthen vessel, over a gentle heat, and stir them continually, till they become drishy and of a yellow colour; then to half a pound of the flowers they add three spoonsful of clear water, and after that a little more, till there is just enough to hold the flowers incorporated together. They boil this for some time; and the juice of the flowers mixing with the water, it becomes thick and yellow. They then take it off the fire, and strain it through a piece of coarse silk. To the liquor they add half an ounce of common alum, and an ounce of calcined oyster-shells, reduced to a fine power. All this is well mixed together, and produces the lasting yellow they have so long used. The dyers of large pieces use the flowers and seeds of the *Acacia* for dyeing three different sorts of yellow. They roast the flowers, as before observed, and then mix the seeds with them, which, for this purpose, must be gathered when quite ripe: by different admixture of these, they produce the different shades of colour, only for the *deepest* they add a small quantity of Brazil wood.

TOTAL NUMBER OF SPECIES OF PLANTS.

It would be most highly interesting, and even now most important to botanical geography, to be acquainted with the total number of species of plants on the earth's surface. At the death of Linnaeus, 3000 species were known, and now perhaps more than 66,000 have been described. The number of those in the *herbaria* of different nations, not yet described, may amount to many thousands, so that the sum total of plants hitherto discovered may be about 80,000. But if we consider what immense tracts of country, as well in America, as in Asia, Australia, and the South Sea Islands, are still entirely unexplored; if we reflect on the vast continent of Africa, which, with the exception of some totally sterile sandy deserts, is as rich in various species of plants as Europe and Asia are known to be, we may at the least double the number of plants already known, so that we shall have 160,000 species. It is also notorious that many recent travellers, who have explored countries long since visited, have found such a quantity of new

plants, that the above number of 160,000 may be very fairly increased by one-fourth, and we may thus assume at least 200,000 kinds of plants as a number perhaps pretty near to the truth. If the interior of Africa should be opened to us, and the mountainous parts of Australia, some of the most important points in botanical geography will be elucidated.—*Von F. J. F. Meyen.*

VALUE OF THE WILLOW.—The importance of the willow to man has been recognised from the earliest ages; and ropes and baskets made from willow twigs were probably among the very first of human manufactures in countries where these trees abound. The Romans used these twigs for binding their vines and tying their reeds in bundles, and making all sorts of baskets with them. A crop of willows was considered so valuable in the time of Cato, that he ranks the salictum, or willow field, next in value to the vineyard and the garden. In France the leaves, whether in a green or dried state, are considered the very best food for cows and goats; and horses in some places are fed entirely on them from the end of August till November. Horses so fed, it is stated, will travel twenty leagues a day without being fatigued. In the north of Sweden and Norway, and in Lapland, the inner bark is kiln-dried, and ground for the purpose of mixing with oatmeal in years of scarcity. The bark of the willow, and also the leaves, are astringent; and the bark of most sorts may be employed in tanning.

SMITH'S YELLOW NOISETTE, budded on an old China stock, will grow remarkably free and open in the most perfect and beautiful style; besides which, it will throw bunches of bloom sufficiently large to justify the name of Noisette, the propriety of which many have questioned, from its indisposition to come in bunches.

WEST INDIA VEGETABLE.—THE PLANTAIN.—This vegetable is to be found in almost all parts of the hot climates, but it is cultivated with peculiar attention in Berbice and Demarara, and it is the principal food of the negroes. They prefer it to all other vegetables for common use, and if it should by any convulsion of nature be destroyed, there could not be found for it, perhaps, a substitute. Flour made of wheat is less palatable to them, and they esteem it less nourishing. Its leaves are found very desirable as an application to blisters, and even used to fatten hogs. The stalk is of a soft texture, it rises to the height of eighteen to twenty feet, and tapers gradually from the bottom (where it is about the thickness of a man's thigh) to the top. Throughout the whole length it is smooth, but at the upper end very long leaves strike out. These leaves are generally eight feet long, and from two to three feet broad, and are easily torn, unless they be laid flat. The fruit when full grown is two feet long, with a number of small fruits six or eight inches long, and about two

inches in diameter; at first green, then a pale yellow; it is covered with a tough skin, but the pulp within is soft and lusciously sweet. When intended for roasting, it is pulled before it is quite ripe, otherwise it would not bear handling. The skin is stripped off, and the rind is then roasted; in this state it is served up as bread, and indeed it is very good.

THE BUDDING OF ROSES, which is best done at the season when the sun is scorchingly hot, will be greatly facilitated by a handful of moss loosely tied over the work, and moistened daily for the first fortnight. Try the experiment with any you now bud, and the result will show it is worth the extra trouble.

HUSBANDRY OF OLD.—From an ancient Latin tract, supposed to have been written about the latter end of the thirteenth century, and which, although chiefly a treatise on law, yet contains many passages relating to rural economy, we learn, that husbandry was conducted with more regard to precision than might be thought consistent with the rude habits of the times. It points out the several duties of the steward, the bailiff, and the labourers; from which it appears, that even in that age, when education was so rare, the farm accounts, on large properties, were kept with scrupulous accuracy; and it gives many directions respecting the tillage of land, and the management of cattle, that are not inapplicable to the practice of the present day. Yet the learned author estimates the possible returns from the soil so low, as to inform us—that unless an acre of wheat yielded three times the seed sown, the farmer would be a loser, if corn were not unusually dear. His calculation is as follows:—

| | s. | d. |
|---------------------------|----|----|
| Three ploughings..... | 1 | 6 |
| Harrowing | 0 | 1 |
| Two bushels of seed | 1 | 0 |
| Weeding | 0 | 0½ |
| Heaping | 0 | 5 |
| Carrying | 0 | 1 |

3 1½

which is about the value of six bushels of wheat at the time he wrote, and exclusive of rent, of which nothing is said. But Sir John Cullum and Sir F. M. Eden, who have devoted much attention to the subject, assume the average crop to have been about twelve bushels; and the former remarks, that, "Supposing 4s. 6d. to be about the mean price of a quarter of wheat, and 4d. a year's rent of an acre of land, the disproportion between the produce of the land and its rent is almost incredible; for if an acre produced in general only a quarter and a half, it would, if the ground was cropped only two years together, give the husbandman thirteen times the rent of his land, one year with another; a profit which the best farmers in the present state of improved agriculture can rarely reach."

THE OLD-FASHIONED GARDENS.—The terraces were broad, and arranged at right angles—the lawns were like carpets of emerald velvet—the parterres were planted with the choicest specimens of flowers, disposed, indeed, in formal patches, but producing altogether the richest effect. Fountains stood here and there by the sides of the walks, grouped occasionally with marble statues, and richly ornamented vases cut in purest alabaster. The sun-dial, that silent moralist, so beloved by our forefathers, and prompting them with so many thoughts, both of grave and cheerful import, still kept its old station on the central lawn; and if one sought a refuge from the summer's heat, verdant alleys, formed by green wall-like edges, neatly clipped, but leafy to the very earth, were not wanting. The designers of these old-fashioned gardens understood better than the new school of landscape-gardeners what is required for the enclosed grounds in which a mansion stands. Every thing in such a place, however large the scale, however magnificent the domain, ought to breathe of home. Nature in such a situation should seem like the trained servant of man. The vistas should be broad, straight, and so lengthened out as to give a distant perspective to the eye, broken only by an occasional statue or fountain. No part of the grounds should be difficult of access; the very boughs of the shrubs ought to be so trimmed as to leave none of those heavy patches of shade, in which, as the sun cannot penetrate them, nothing but unwholesome damp and unsightly mildew breeds; the fervour of the noon-day heat should be mitigated rather by such a moving and playful fret-work of light and shadow as the waving sprays of slender trees can produce, than by a dense mass of intertwined branches and thick foliage. Contrast is in most things a great source of pleasure; why then should we not procure it here, and reserve our relish for the grand, the irregular, and the wild in nature, for excursions amidst her untamed beauties, whence the return to our own luxurious domicile would afford us all the enjoyment of variety.

ON THE CULTURE OF CELERY.—I sowed seed immediately in a slight hot bed, on a rich, light, and fresh sandy loam, from an old pasture. The bed was well attended with water, and the plants came up quickly. When they were about two inches high, I began to think of giving them their final transplanting. I found an old melon pit, that had been a long time out of use, which I filled with all the cabbage stalks I could find in the garden then going to bloom, these were regularly packed into the pit, with a good quantity of short grass from the pleasure ground laid over them, and over that a layer of rotten leaves from a neighbouring plantation. I then spread some rotten dung, and over all about four or five inches of very good

earth. When the bed had settled, and the violent heat was over, I put out the stoutest plants I could find, from the thinnest part of the seed bed, at twelve inches between each row, and about six inches from plant to plant. Here they were also well attended with water, weeding, and hoeing. They got two or three light landings with earth, and after that, they were finished off with coal ashes, as there happened to be plenty convenient. In landing celery planted so close together, it is proper to have two boards laid between the celery, one close to each row; the earth or coal ashes, or turf mould, is then thrown in between the boards. The boards are then gently raised, and placed again between other rows, till all are finished. The use of the boards is to prevent the earth getting to the heart of the plants. I believe there is nothing new in growing celery in close rows; but I am almost certain there is something new in my method of doing the work; for on the 15th day of August I had fourteen dozen of as fine celery as any one could wish to see—well blanched and fit for the table, without marks of worm or slug. This was exactly three months from the day the seed was sown. With respect to a melon pit, it is not every place that can be spared for the above purpose; but is very easy for any person to imitate one by making a pit in the ground. There might be stakes put round the sides, and worked like wickerwork, or a bag of sods would, in my opinion, be much better, as it would keep in the heat.—*James Macklin.*

CHEMISTRY OF AGRICULTURE.—Sir H. Davy, in a lecture on this subject, remarks that "Agriculture, to which we owe our means of subsistence, is an art intimately connected with chemical science; for although the common soil of the earth will produce vegetable food, yet it can only be made to produce it in the greatest quantity, and of the best quality, by methods of cultivation dependent upon scientific principles. The knowledge of the composition of soils, of the food of vegetables, of the modes in which their products must be treated, so as to become fit for the nourishment of animals, is essential to the cultivator of land; and his exertions are profitable and useful to society, in proportion as he is more of a chemical professor. Since indeed the truth has been understood, and since the importance of agriculture has been generally felt, the character of the agriculturist has become more dignified and more refined;—no longer a mere machine of labour, he has learned to think and to reason. He is aware of his usefulness to his fellow men, and he is become, at once—the friend of nature, and the friend of society." Agricultural Chemistry has not yet received a regular and systematic form. But if land be unproductive and a system of ameliorating it is to be attempted, the sure method of obtaining the object is, by determining the cause of its sterility,

which must necessarily depend upon some defect in the constitution of the soil, which may be easily discovered by chemical analysis. Are any of the salts of iron present? they may be decomposed by lime. Is there an excess of siliceous sand? the system of improvement must depend upon the application of clay and calcareous matter. Is there a defect of calcareous matter? the remedy is obvious. Is an excess of vegetable matter indicated? it may be removed by liming, paring, and burning. Is there a deficiency of vegetable matter? it is to be supplied by manure. In the selection of the remedy after the discovery of the evil, chemical knowledge is of the highest importance. Limestone varies in its composition, and by its indiscriminate application we may aggravate the sterility we seek to obviate. Peat earth is an excellent manure, but it may contain such an excess of iron as to be absolutely poisonous to plants. How are such difficulties to be met but by the resources of chemistry? That much vague speculation may be found in the works of those who have lightly taken up agricultural chemistry it is impossible to deny. It is not uncommon to find a number of changes rung upon a string of technical terms, such as oxygen, carbon, and azote, as if the science depended upon words, rather than upon things. But this in fact is an argument for the necessity of the establishment of just principles of chemistry on the subject. If a person journeying in the night wishes to avoid being led astray by the ignis fatuus, the most secure method is to carry a lamp in his own hand."

ILLUSTRATIONS OF THE USES OF BOTANICAL KNOWLEDGE IN AGRICULTURE.—SIR,—In a previous paper I gave a few instances of the advantages of botanical knowledge to the agriculturist; and, with your permission, I will occasionally submit to him other illustrations of its necessity to a judicious direction of his operations.

I have rarely met with a farmer, who, if you were to mention to him the existence of sexes in plants and their functions of production, would not either laugh or frown in your face. Any one, however, may easily understand the matter by looking into the flower of a common tulip when it opens: inside he will perceive six slender erect chives, surrounding a stronger body, which is the *female* part of the flower. Upon the top of these chives hang little oval bodies, which in a day or two after the flower is blown, burst into a mealy substance. This meal is the male part of the flower; and falling upon the female part, which is furnished with a viscous kind of matter to retain it, impregnation immediately takes place, and thence the seed is produced perfect and entire.

Reproduction depends upon a similar impregnation in all plants, and is strong and abundant or not, according as the female part receives

the male farina plentifully or otherwise. If therefore the farmer dreads heavy rains immediately after he has sown his seed, he may with equal reason dread them when his corn is in bloom; for as the wet will injure him in the one case by bursting his seed, so will it in the other by washing off the male dust, and thus hindering effectual impregnation. The knowledge of the fact will not, of course, enable him to prevent it; but it will do this—when he finds his corn thrash out small and pined, it will save him from the blunder of attributing it to a wrong cause, and from the expense of adopting fruitless remedies against it.

The male dust of a plant is easily wafted by the wind to the female part of any other contiguous plant; and hence we have so many mongrel sorts of a seed, that we can place very little reliance upon the genuineness of any we buy for sowing. In the case of cabbages, broccoli, &c., the farmer may see this phenomenon demonstrated to the eye. This therefore would lead him, when raising seed for himself, to choose a rather isolated spot for the purpose, to prevent the disappointment of a mongrel produce. In short, Sir, at every step he would find botany a book of useful suggestions; but as my object is merely to direct his attention to the subject, and not to write treatises upon it, I conclude. Yours obediently, A BOTANIST AND AGRICULTURIST.

EFFECTS OF VEGETABLES IN PURIFYING CONTAMINATED AIR.—Whilst Dr. Priestly was engaged in a series of experiments to enable him to purify contaminated air, he discovered that vegetables answered this purpose most effectually. The experiment by which he illustrates the fact is this:—having rendered a quantity of air very noxious, by mice breathing and dying in it, he divided it into two receivers inverted in water, introducing a sprig of mint into one of them, and keeping the other receiver with the contaminated air in it alone; he found, about eight or nine days after, that the air of the receiver into which he had introduced the sprig of mint had become respirable; for a mouse lived in this, but died immediately upon being put into the other receiver, containing the contaminated air alone. All strongly scented objects vitiate the air; and it has been satisfactorily proved by the experiments of Ingenhouz, Priestley, and others, that most plants emit during the night a large proportion of azotic or irrespirable gas: it is on this account that flowers suffered to remain all night in a bed room sometimes prove very deleterious in their effects. Nor is it less unhealthy to sleep in a room where a quantity of green fruits are constantly kept, as from its fragrance a portion of inflammable matter transpires, which soon impregnates the air. After the recovery or decease of a person labouring under an infectious fever, the roof or walls of the apartment in which he lay ought to be white-

washed, the windows kept open during the day, and flowers or herbs, immersed in water, placed in such parts of the room as are more immediately exposed to the action of the sun's rays upon them.—*R. Reece, M.D.*

TREES AND FLOWERS APPROPRIATED TO PLACES OF INTERMENT.—At all periods, amongst every nation, flowers and certain trees seem to have been consecrated to the dead. The Romans planted the wild vine and box around their tombs. The wealthy assigned a beauteous garden to their departed favourites, as in the instances of Augustus and Mæcenas. Not only did they suspend garlands over their tombs, but scattered flowers around them. The same custom prevailed among the Grecians, who considered all purple and white flowers acceptable to the dead. The Thessalians strewed the grave of Achilles with the immortal amaranth and lilies. Electra complains that the tomb of Agamemnon received no myrtle boughs; in short, instances of this practice are everywhere to be found. Amongst the Chinese, to the present day, the cypress and the fir shade their cemeteries; the former tree, an attribute of Pluto, was ever considered funereal, hence called *feralis*; and the *feralia* were festivals in honour of the dead, observed by the Romans. Varro pretends that the cypress was called funereal from *funus*, as it emitted an antiseptic aroma. Pliny and others affirm that it typified the dead, from its never shooting out fresh sprouts when the trunk was cut down. At any rate, to this hour it is planted in burying-grounds in every civilized country.—*Curiosities of Medical Experience.*

ANTIQUITY OF THE HOP.—It is said that the Hop is not indigenous to England, but that it was brought to this country from Flanders, about the year 1525, and in 1528 the Parliament was petitioned to forbid its use, as being a pernicious weed, that would spoil the taste of drink. The plant was, however, known long previously to the former period, as it grew wild by the sides of hedges in many parts of England; and its young shoots were often gathered by poor persons, and boiled as an esculent vegetable. The generic name of the plant *humulus* is formed from *humus*, "fresh earth;" and the specific name *lupulus*, from *lupus salutaris*, the name by which, according to Pliny, it was formerly called, because it grew among the willows, to which, by twining round and choking up, it proved as destructive as a wolf to a flock. It is rather curious that an allusion to the wolf is also contained in the British name of the plant, *llewig y blaidd*, or "bane of the wolf." The current name, *hop*, appears to proceed from the Anglo Saxon *hoppa*, to climb. Before this period, ground ivy was used for preserving beer.

The *CAMELLIA JAPONICA* may be successfully pushed to two growths in a season, thus—As soon as they are out of flower give them heat

and shade in the stove; and when the growth is completed, let them rest a month in the shade in the open air; place them in the stove again as before, and it is a great chance if the second growth be not more strong than the first, and the set for bloom is almost a matter of certainty. This is most important with new and scarce plants, because a very small one, such as is usually let out, becomes a handsome plant in one season. It is still more important to those who desire to propagate them.

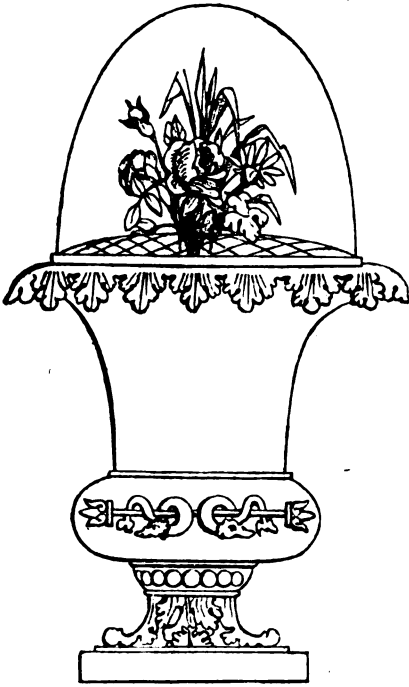
THE MANITA TREE.—So named from the singular shape of its flower, (*manita*, meaning a little hand) is a species of plant almost unknown in the catalogues of the botanist. It is supposed that only three specimens are in existence; two in the small botanical garden at the palace in the city of Mexico, and one at the town of Toluca; it is certain that no one in Mexico can tell from whence they originally came, or where they may be found growing in a wild state; but as they were preserved, with many other foreign productions, by the Emperor Montezuma, it is imagined that either himself or his ancestors must have obtained them from the interior of South America. The tree is about forty feet in height, with a small trunk, without branches almost to the top; but the boughs then stretch a considerable distance, with large leaves and numerous flowers hanging downwards from among the foliage; it bears a stronger resemblance to the plane or tulip tree than any others we are acquainted with. Tradition states that though the Indians did not actually worship the manita tree, yet they regarded the flower with a sort of religious veneration.—*Beaucy's Illustrations of Mexico.*

PHILANTHROPIC SOCIETY OF GARDENERS, &c.—Destined to work considerably in favour of the gardening interests, and delight all who wish well to Horticulture. The straightforward character of the proceedings, the nature of the meetings, the attendance of Gardeners and others, seem more like the workings of an old established concern than the first effort of a young society. But this arises from the simple construction of the institution, the understandable nature of the objects, and the claims of the large class for whom these objects are to be carried out. There is no mystery about the concern. The amalgamation of the three different interests, at once disarms the most jealous of the people who are called upon to support it, and gives a kind of security for the fair administration of whatever funds it may hereafter possess. Nor is it the least of its recommendations, that to prevent any hasty commencement of relieving objects, fifty pounds shall be invested before any be expended, and that then only half the income shall be disbursed, until five hundred pounds be realised as a permanent fund.—*Gardeners' Gazette.*

GOOD FLORISTS MAY BE INCOMPETENT JUDGES.

OFTEN as it has been our province to point out the real properties of Flowers and Plants, universally as they have been approved, and earnestly as the appointed judges have expressed their determination to act on the points we have laid down, we rarely see a decision in which they are not lost sight of, or an award in which they are properly considered. This arises from various causes, some of them merely accidental, others discreditable; but the former preponderate. A large dealer, an experienced florist, or a conceited amateur, fancies he knows a good deal about Flowers, while he may be so destitute of the organ of order as not to see the most glaring faults that can outrage taste in a collection. He may mean to act fairly and honourably, and fancy he has done so, whilst he has awarded a prize to undeserving productions, the imperfections of which are of a nature to be seen by most other people. He is then condemned for partiality or prejudice, while he is perfectly innocent of everything but accepting an office above his capacity, and which he ought not to have undertaken. There are others whose experience is so great that there is scarcely a variety unknown to them, and there are few which they cannot recognise at first sight, and tell their origin. These persons are usually selected as judges, though perhaps they are the very last who should be so employed; they are the kind of people who, knowing all the flowers in their various characters, will be haggling over two blooms, perfectly unlike, but which they will persuade themselves, and half persuade others, are the same variety in different characters—a fact not by any means essential in deciding the merits of a stand, or collection, the sole object of the regulations (which do not allow two flowers alike) being to insure a variety; and, as we have maintained over and over again, if two blooms are so much alike as to raise the least doubt, the stand should be excluded; while, on the contrary, if there are not two alike, or near alike, the judges have no right to be consulting about the possibility of two blooms which differ being the product of the same plant or variety. Those gentlemen who have the names of flowers at the tips of their tongues, and who can detect them whether they bloom in or out of character, are by no means to be desired as judges, for as every variety that should be grown as such, differs in form, or colour, or both, from each other, scarcely any two are of the same degree of perfection when at the best, nor are any two of the blooms of the same variety alike in quality even the same season, and under the same treatment. Whenever, therefore, twelve flowers are placed upon a stand, each of which to be perfect should possess several distinct properties, and no two of which can possess them,

or any of them, in the same degree, a man—if such could be found—who does not know the age, value, or name of a single flower in the stand, and who has no better qualification than a quick eye and a good notion of forms, colours, and symmetry, would far excel all others as a judge. He would be unprejudiced by novelty or age, by high or low prices. He would not have to trouble himself about whether two flowers were the same variety in different characters; he would have no other duty than that of seeing that every stand had the proper number of distinct and different flowers, free of any absolute disqualification, and to decide which of these stands approached the nearest to perfection, he being, as well as every exhibitor, *furnished with the rules by which flowers of all kinds should be judged*, or a list of the properties which a perfect flower should possess. It is not one good grower in a hundred that can go in among a great assemblage of flowers, and select the best, nor are there many who, with all the rules in their hands, can readily determine which collection possesses the greatest number of points of excellence. The old judges pride themselves infinitely more upon their capability of discovering a run petal or a split pod in pinks or carnations, a faulty eye or an earwig hole among dahlias, or two flowers of the same variety, or any other damning error in a collection of any kind, than they do upon a proper adjudication of the stands which may remain, and with all their apparent anxiety, these men will be marching up and down the tables, pulling about and comparing the stands for an hour, and after all be no forwarder than they were the first ten minutes. At length their decision is called out for by the people who are waiting, the judges are sick of what is to them a difficult job; they hastily place them somehow or other, and come out of the place not even satisfied with themselves, and this is supposing that all these are good growers and dealers. Some are captivated with colour, some with size, some with price, but few eyes are capable of rapidly estimating the real beauties, the real properties, even when told of them, nay, even with the printed directions for their guide. It is charitable to suppose, that to this absence of judgment, even on the part of men who can talk of the properties, who would appear from their conversation to understand them, nay, who can see them when pointed out, but who, nevertheless, judge flowers as if they had never heard of their proper qualities, and not any sinister design, may be attributed a fact which cannot be disputed, that many florists have imposed upon us as perfect, flowers which have turned out worthless, and the purchasers have been taken in as completely as if they had taken the nominal value in base coin.



ELIZABETHAN VASES.

WE give another sketch of these very pretty adjuncts to the sitting room or drawing-room, and we have numerous designs left in our hands for a continuance of the subject. We presume we have described the principle well enough to enable any potter or porcelain worker to produce them of all shapes and fancies. There is as much room for the exercise of taste as in any one article we know of, and we have no doubt in the world, that any China warehouse in the town will be able to serve them in one month from the present time. It is, however, desirable, that in large Vases there be a vessel to fit in, for the purpose of holding water, as so large a body of it as some jars would hold would be inconvenient. Mr. Hunt, of Queen's Row, Pimlico, very readily took up the subject of flower pots from suggestions thrown out by us, and we think he cannot do better than turn his mind to something in the way of the Elizabethan Vase, blending elegance with economy.

ON THE DISEASE IN PANSIES.

I SEE many inquiries into the cause and nature of the disease in Pansies. The immediate cause of it is what is familiarly called mildew, which

is well known to gardeners under that appellation, and attacks, and often destroys, the crops of peas. Probably the best account of it will be found in Dr. Robert Greville's Scottish Cryptogamic Flora, published at Edinburgh by Mac Lachlan and Stewart in 1825, under the name of *Erysiphe Piri* (Pea Leaf Mould), Fab. 134. As, however, that work may not be accessible to your readers, I shall give a short extract from it. "*Erysiphe*, of *Rebentisch*, is perhaps one of the most extraordinary genera of *Gastromyci* we are acquainted with. All the species are found in living leaves, and are well known to gardeners, nurserymen, and farmers, by the general but improper name of *mildew*; though other diseases have also received the same name. On the garden pea its effects are so injurious, as sometimes to destroy the whole crop. That it should occasion so much mischief ceases to be wonderful, when we submit it to the power of the microscope. The leaves are then found to be completely coated (sometimes on both sides) with a thin, but very dense veil of filaments, which must materially interrupt the natural functions of the plant. Added to this, it is highly probably that the innumerable receptacles, or *sporangia*, situated in the filaments, derive their support in a greater or less degree through their medium from the juices of the plant."

The plant which attacks the Pansey is either the same, or a species very nearly allied to *Erysiphe Piri*. There is no doubt that the complaint and death of the Pansies is caused by a species of *Erysiphe*, which finds a proper situation in consequence of the *diseased state of the leaves*, having been previously brought on by some cause or other. This season I have little doubt that it has been induced by the heavy rains. I have found, also, that a slight degree of frost or rhyme will render the plant liable to the attack of mildew.

I observe that Loudon says, on the authority of J. Robertson, Hort. Trans., v. 178, that sulphur has been found the only specific cure. I have no experience on this subject, but fear that it will be found easier to prevent the attack than to remove it from the plant when attacked. If the attack is a slight one, I would recommend the leaves affected to be taken off immediately, otherwise the disease will spread with fearful activity. Loudon, in his Encyclopædia of Plants, under the name of *Erysiphe*, notices fourteen species of it, but not any species peculiar to the Pansey.

I find that a gardener in this neighbourhood, whose Pansies were attacked in spring, 1842, cleared them of the complaint by means of sulphur. JAMES HERIOT.

[We believe the best preventive is to thoroughly underdrain the bed.]—ED., G.

Encyclopædia of Flowers.

THE GERANIUM OR CRANE'S BILL.

This now popular plant was even in Miller's time in some repute, for he records no less than forty-seven species. But Mons. L' Heritier seems to have separated from the Geranium some under the name of Pelargonium or stork's bill, and others under the name of Erodium or heron's bill, a piece of affectation which he might as well have followed up by a still further division into woodcock's bill, snipe's bill, spoon bill, and so forth. However the notion of some of the would-be-thought-clever people, who are polite enough to use the word Pelargonium, is, that it is a general change of a vulgar name, and belongs to the whole tribe, so that if Linnæus was wrong in calling them all Geraniums, these very clever people are making a great blunder in calling them all Pelargoniums. But the Geranium is now too familiar and too popular to allow of the innovation becoming general. Geranium it has been called, and will by a large majority, continue to be called, in spite of the labours of writers to prevent it. In the following list of species mentioned by Miller we have found some which are allowed by the modern botanists to be still Geraniums; these we have marked with a star. Some others we have found among the Erodiums, which we have marked with an E, and nearly all the rest we can neither find in Paxton's nor Loudon's dictionaries, and therefore we have further to surmise that modern innovation has changed their names also, or they have proved to be only varieties instead of species, and are blotted out of the catalogues. However, it is quite necessary we should give some particulars of a genus of plants which have been so long a time established favourites.

* 1. *Geranium (Pratense)*, Crane's-bill, with two flowers on each foot-stalk, target-shaped leaves, cut into many acute segments, and entire petals.

* 2. *G. (Macrorrhizum)*, Crane's-bill, with two flowers upon each foot-stalk, inflated empalements, and a very long pointal to the flower.

* 3. *G. (Sanguineum)*, Crane's-bill, with one flower on each foot-stalk, and orbicular leaves, which are trifid, and divided into five parts.

* 4. *G. (Lancastrense)*, Crane's-bill, with one flower upon each foot-stalk, leaves divided into five parts, whose segments are short, blunt, and declining stalks.

* 5. *G. (Nodosum)*, Crane's-bill, with two flowers on each foot-stalk, the leaves upon the stalks having three entire sawed lobes, the upper leaves sitting close to the stalk.

* 6. *G. (Pheum)*, Crane's-bill, with two

flowers on each foot-stalk, alternate leaves, bearded empalements, an erect stalk, and waved petals to the flower.

* 7. *G. (Fuscum)*, Crane's-bill, with two flowers upon each foot-stalk, leaves divided into five lobes, which are cut, and the petals of the flower reflexed.

* 8. *G. (Striatum)*, Crane's-bill, with two flowers upon each foot-stalk, one bigger than the other, leaves having five lobes, and flowers with two lobes.

* 9. *G. (Sylvaticum)*, Crane's-bill, with two flowers on each foot-stalk, target-shaped leaves, with five lobes deeply sawed, an erect stalk, and indented petals to the flower.

10. *G. (Orientale)*, Eastern Dove's-foot Crane's-bill, with opposite leaves, two flowers on each foot-stalk, and a short empalement.

11. *G. (Perenne)*, Crane's-bill, with two flowers on each foot-stalk, the lower leaves having five many-pointed lobes, the upper three, and an erect stalk.

E 12. *G. (Alpinum)*, Crane's-bill, with very long foot-stalks, sustaining many flowers. bearded empalements, and double wing-pointed leaves.

* 13. *G. (Argenteum)*, Crane's-bill, with two flowers on each foot-stalk, target-shaped leaves, divided into seven parts, which are silvery, and the petals of the flower indented.

* 14. *G. (Maculatum)*, Crane's-bill, with two flowers on each foot-stalk, upright stalks divided by pairs, and cut leaves divided into five parts, the upper sitting close to the stalk.

* 15. *G. (Bohemicum)*, Crane's-bill, with two flowers on each foot-stalk, indented petals to the flower, hairy beards, and a trifid leaf.

* 16. *G. (Sibiricum)*, Crane's-bill, with one flower on a foot-stalk, leaves divided into five acute parts, and the smaller leaves wing-pointed.

E 17. *G. (Moschatum)*, Crane's-bill, with many flowers on each foot-stalk, having five stamina to the flower, and cut winged leaves.

E 18. *G. (Gruinum)*, Crane's-bill, with many flowers on a foot-stalk, five stamina to the flower, and ternate lobed leaves.

E 19. *G. (Ciconium)*, Crane's-bill, with many flowers on each foot-stalk, having five leaved empalements, five stamina to the flowers, and acute, sinuated winged leaves.

20. *G. (Viscosum)*, Crane's-bill, with many flowers on each foot-stalk, having five leaved empalements, flowers with five stamina, and many pointed winged leaves.

21. *G. (Cucullatum)*, Crane's-bill, with an empalement of one leaf, and indented hooded leaves.

22. *G. (Angulosum)*, Crane's-bill, with a one-leaved empalement, and angular hooded leaves, sharply indented.

23. *G. (Zonale)*, Crane's-bill, with a one-leaved empalement, and round heart-shaped leaves, which are cut and marked with a circle.

24. *G. (Inquinans)*, Crane's-bill, with a one-leaved empalement, and round kidney-shaped leaves, which are woolly, crenated, entire, and a shrubby stalk.

25. *G. (Capitatum)*, Crane's-bill, with empalements of one leaf, leaves divided into lobes, which are waved and hairy, and a shrubby stalk.

26. *G. (Vitifolium)*, Crane's-bill, with one-leaved empalements, ascending leaves which have lobes, are covered with soft hairs and a shrubby stalk.

27. *G. (Papilionaceum)*, Crane's-bill, with an empalement of one leaf, a butterfly flower, whose wings and keel are very small, and a shrubby stalk.

28. *G. (Acetosum)*, crane's-bill, with impalements of one leaf. Smooth, oval, fleshy leaves, which are crenated, and a shrubby stalk.

29. *G. (Carnosum)*, Crane's-bill, with an impalement of one leaf, a shrubby stalk with fleshy knees, wing-pointed leaves, and very narrow petals to the flower.

30. *G. (Gibbosum)*, Crane's-bill, with a one-leaved impalement, shrubby stalk with fleshy knees, and winged leaves placed opposite.

31. *G. (Fulgidum)*, Crane's-bill, with one-leaved impalements, leaves cut into three segments, the middle one being the largest, double foot-stalks, with flowers growing in umbels, and a shrubby, fleshy stalk.

32. *G. (Pellatum)*, Crane's-bill, with empalements of one leaf, and smooth target-shaped leaves, having five lobes, which are entire.

33. *G. (Alchimilloides)*, Crane's-bill, with empalements of one leaf, roundish hand-shaped leaves, which are divided, hairy, and an herbaceous stalk.

34. *G. (Odoratissimum)*, Crane's-bill, with empalements of one leaf, a very short fleshy stalk, long herbaceous branches, and heart-shaped leaves.

35. *G. (Triste)*, Crane's-bill, with sessile empalements of one leaf, a bifid stalk, and a roundish root.

36. *G. (Myrrhifolium)*, Crane's-bill, with empalements of one leaf, doubly wing-pointed leaves, the lower heart-shaped, with lobes, and an herbaceous stalk.

37. *G. (Pastinacæfolium)*, Crane's-bill, with empalements of one leaf, decompounded leaves, ending in acute winged points, and very long foot-stalks to the flowers.

38. *G. (Villosum)*, Crane's-bill, with empalements of one leaf, hairy wing-pointed leaves, having very narrow segments.

39. *G. (Lobatum)*, Crane's-bill, with em-

palements of one leaf, a truncated stalk, foot-stalks arising from the root, and a compound umbel of flowers.

40. *G. (Coriandrifolium)*, Crane's-bill, with a one-leaved empalement, doubly winged rough leaves, and a very smooth stalk.

41. *G. (Romanum)*, Crane's-bill, with many flowers on each foot-stalk, cut winged leaves, and foot-stalks rising from the root.

42. *G. (Grossularoides)*, Crane's-bill, with empalements of one leaf, roundish heart-shaped leaves, which are crenated, and herbaceous smooth stalks.

43. *G. (Betulinum)*, Crane's-bill, with one-leaved empalements, and oval plain leaves, unequally sawed, and a shrubby stalk.

E 44. *G. (Chium)*, Crane's-bill, with many flowers on each foot-stalk, heart-shaped cut leaves at bottom, the upper lyre-shaped, and winged.

E 45. *G. (Malacoides)*, Crane's-bill, with creamy flowers on each stalk, and heart-shaped lobed leaves.

E 46. *G. (Glaucophyllum)*, Crane's-bill, with many flowers on each stalk, and oval sawed leaves.

47. *G. (Carolinianum)*, Crane's-bill, with two flowers on each stalk, bearded empalements, many pointed leaves, and hairy beaks.

48. *G. (Althæoides)*, Crane's-bill, with a one-leaved empalement, oval heart-shaped plaited leaves, which are indented, and a prostrate herbaceous stalk.

Paxton gives a list of no less than two hundred and fifty introduced species of *Pelargoniums*, one half of which have no more right to be called species than any one of the thousands of varieties which have been raised in England. Botanists seem to forget altogether, that although we can assist nature greatly in hybridizing, nature has worked for itself, and the great majority of species, as they are called, are doubtless nothing more than seedling varieties. The great characteristic of many *Geraniums* was their beautifully scented foliage, which does not seem to belong to any of the show *Geraniums*, yet we last season met with one (we think of Mr. Gaines's) in which the perfumed foliage was very sweet and very remarkable. The love of the old sorts seems to have been abated by the superior flowers of the new, but we remember with great satisfaction the appearance of a house of *Geraniums* of the ivy leaf, oak leaf, horse shoe leaf, the mint leaf, the variegated, and many others, which, being well grown, looked very rich and diversified. The culture of the old sorts will not be lost sight of, but, in the present day, we must think of showing sorts first.

COMPOST FOR GERANIUMS.

The proper compost for a *Geranium* is a rich loam and dung, but rich loam is a very unde-

fined, and undefinable term. The top spit of a meadow, with the turf rotted in it, would in some cases be considered a rich loam, but the turfs cut off a good pasture, four inches thick, and rotted, is under all circumstances rich—rich in the best of all richness, vegetable nourishment. The turf is so much vegetable mould, or, as others call it, vegetable manure. If we possessed a quantity of this rotted turf, we should use two parts of it to one part rotted cow dung, that is, neat cow dung rotted into mould. If the soil thus mixed appeared too retentive, though the top four inches of a pasture seldom is so, a little sand must be added. We leave the bone-dust and the other nostrums to the experience of those who know how to use them, just as we should leave the teaching of a youth how to shave himself until he had learned all the rest necessary to make a man of him. All exciting composts should be avoided until a man knows how to do all that can be done without it. If such loam as we have described cannot be obtained, you must get the best loam you can without the turf in it, and use two parts of it with one part of leaf mould, and a part and a half of dung, and if it be too adhesive, use enough sand to let the water drain through it freely. There are those who use the broken turfy peat, rubbed through a sieve, among the compost, to lighten it, instead of sand, but if the compost be such as we have described, made from rotten turfs and cow dung, there will be no danger of its being light enough and rich enough. We ought to have added, that if cow dung cannot be had, the next best to use in its stead, is the dung of an old melon or cucumber bed, completely rotted, and the older the better.

THE CULTURE OF THE PELARGONIUM.

THE fashion of growing this beautiful family of plants has become so vulgar, and the mechanical contrivances to support its miserably weak flowers are so coarse and repulsive, that we may be considered by those who have become reconciled to the modern custom, rather severe, when we assert, that the plan of tying all the blooms up to sticks, and showing large quantities of insignificant flowers, is a disgrace to the gardening profession, and could never have been tolerated by societies which are governed by practical men. Whether severe or not, we utterly repudiate the practice upon several distinct grounds; First, the plant is increased in size at the expense of half the strength of every individual branch, and half the size of the foliage; Secondly, by increasing the number of blooms, you alter the very character of the flower as well as its colour, size, and substance; Third, the number of sticks employed to support the stems, totally destroys the appearance of the plant; Fourthly, the practice of supporting the stems has enabled growers to introduce a number of varieties of weakly and worthless kinds,

incapable of supporting themselves, and has rendered the habit of the plant quite a matter of indifference; Fifthly, it has led to a very general but unfounded idea, that Seedling Geraniums degenerate, an idea totally erroneous, inasmuch as they improve rather than get worse when they are taken proper care of, and grown as they ought to be. There are very distinct properties in flowers and in plants, and those of the former ought not to be sacrificed for the latter. In a Geranium bloom there are several very decided qualities required to make it worth adopting as a show flower. To develop these flowers properly, it should be grown as an *Auricula* is grown, with a single heart and a single stem and truss. We do not say we would deter a man from growing a plant as large as a mulberry tree, and as weak and spindly as a chick-weed, but he should never be encouraged so to spoil a good plant, nor be enabled to exhibit it as a specimen of skill. Half the cottagers, who put Geraniums in their windows for sun-blinds, and train them over a trellis the full size of the glass, would shame the best specimens ever exhibited, if size of the plant and quantity of bloom were the only points to accomplish; but to see rational men, who know their business, fool away their time to distort a plant, and then have it judged, like a baron of beef, by the size only, is, to us, a subject of regret as well as surprise, because there is no more difficulty in growing a Geranium up to the size of a Portugal Laurel than there is in growing a Battersea Cabbage, except that the porter's work of lifting about the pots and shifting the plants is a disadvantage on the one hand, and the children's work of tying up all the dwindling flower stems is additional on the other, but neither the porter's work nor the children's work add much to the dignity, nor say much for the skill of a gardener. We say again, we do not object to a man's doing it, because such frivolities suit the tastes of some employers, but that a society, which affects to encourage skill in gardeners, should give premiums for such folly, is to be deplored. It is much easier to grow Geraniums in this silly way than people imagine, and, for the benefit of those who do not pretend to be gardeners, who love great staring plants, who do not know the difference between a good flower and a bad one, but who appreciate plants by their size, and the blooms by their number, we will give them a short lesson.

First, get your Geranium, no matter how large or how small, only that the larger it is when you begin the shorter time it will be growing to the desired uncouth and unmanageable size, and affording the requisite quantity of mis-shapen flowers. Turn the ball of earth out of the pot to see if the roots have reached the sides. If they have, get a large flower pot, cut back the whole of the branches to within two eyes of the main stem, put a few potshreds or crocks in the bottom of the pot, just cover

them with the proper compost, half an inch, and place the ball of earth and the plant in the new pot as much lower than it was before as will sink all the single stem, or, if you cannot sink all, sink as much as you can. Let this be kept moderately watered and growing, and as fast as the pots fill with roots change them to a larger size. You will soon have twice as many branches as you had before you cut them back. As soon as these new branches have acquired a manageable length, get some child whose time is worthless, and teach him or her to put a stick to each of the branches, and tie them all out in a sloping direction, so that they shall spread out equally all over the pot; and, if you wish it, you may then let it bloom, taking care that, as the stems will not hold up the flowers, you set children to tie them to twigs or sticks, which much must be stuck all over the pot for that purpose. As soon as it has done blooming, cut all the branches back again to within two eyes, get a pot still larger, shift it as before, sinking it still lower in the pot, till the under branches are down in the soil, or at least touch it, for these under branches will all strike root, the branches will come still more numerous, and you may continue this shifting into larger pots, and cutting back the branches after blooming, so long as you can find porters strong enough to lift them about for you, and children to stick the pots full of twigs, and tie up the blooms, for the porters' work and the children's work will be the only obstacles to your getting a Geranium large enough to fill a mash tub with its roots, and Exeter Hall with its branches. In this culture it must be recollected, that if you begin with a small plant, with only one stem, and no branches, you must cut that stem back to within three or four leaves, and if the stem has no leaves near the pot, cut it back to about the distance of four inches, and every time you change the pots, which should be as often as the roots fill up the old one, sink the stem deeper till the lower branches actually reach the soil. We have made no fuss about doing all this in a greenhouse, or frame, or stove; for the directions would do for a parlour window; the plants will not grow so fast, perhaps, but they will only be longer getting to the required size. The entire art consists of cutting the branches back, and shifting them out of one pot into another as often as the roots fill them. But, lest our readers should fancy we are joking with them about the twig business, we subjoin the accounts which two of these monster Geranium growers give of their own proceedings when perverting the growth of this very beautiful plant. We begin with an extract from Mr. Catleugh's instructions, already noticed in an early part of this work. It is not very long, but there is enough of it to show we are not jesting. Mr. Catleugh says—

"About the middle of February, those *plants*

which are intended to be large specimen *plants* are shifted again into twenty-four sized pots; those of vigorous growth will require a size larger. A small stick is now put to each stem, to train them into uniform and well-shaped *plants*."

Thus the stick business is elevated to "training," instead of saying, as ought to have been said:

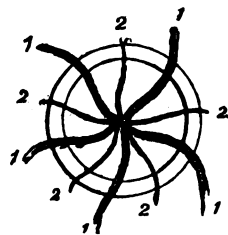
"Those persons who cannot grow a plant as it ought to be grown, but get it weak and dwindling, had better get a quantity of sticks, and tie the branches up."

There is a stick to be placed to each stem "to 'train' them into uniform and well-shaped plants."

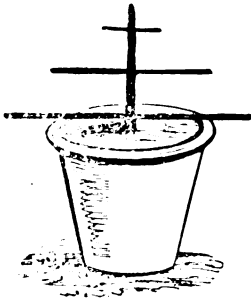
What says Mr. Cock about this gooseberry-bush fashion of growing Geraniums:

"In November the plants are stopped (which means the growing points are pinched out), a stick is then put to each shoot to make the plants uniform."

If we were desirous of growing large plants in perfection, we should begin with a small plant, which there is no difficulty in obtaining, if it be a new sort. The dealers seldom trouble us with a large one. This we should cut back as soon as it was long enough to spare a cutting off the top. We should shift the plant into good compost, and a pot not too large. This we should grow in a declining hot bed, or in the greenhouse, or, for want of either, in a parlour window. The instant any shoot attained the length which formed a good shaped plant, we should pinch out the growing point to stop it there. As the fresh branches formed, we should regularly pinch off or remove all that came in each other's way, or crowded the plant, because the plant to be strong must have but few branches, and these well disposed; thus, suppose we are looking down on the centre of a plant, the lower or longest branches might be as figure 1—as we come to those above them, they might be like figure 2, and so on.



The circle is supposed to be the edge of the pot, the longest five branches to be down pretty close to the edge, and hang over. The branches rather higher only to be as long as to reach the edge of the pot, and to branch out above the others, and shorter as we get higher. The annexed will give an idea of what we mean. Continue to shift the pots as soon as they fill with



roots, but do not let the branches crowd each other. Let every limb have room, for by stopping each branch as soon as it has extended far enough, you will get a strong, as well as a large plant. Continue to take off every side shoot that is in the least crowded, or calculated to crowd another. But after March, in the season it is to bloom, there must be no more shifting pots nor stopping shoots. All the ends of the shoots will throw trusses of bloom, and as all the branches will have had plenty of light and air, and room, it may be expected to throw up strong flowers, and plenty of them, that will require no wooden supports. But, after all, growing large Geraniums should be limited to the open air. When a plant has done its work for the season it should be cut back pretty close, and grown in the spring, only till it can be turned out into a clump or border. Show Geraniums like show pinks should be, only from cuttings, grown with a single heart, one stem, and one truss.

ONE YEAR OLD PLANTS FROM CUTTINGS.

The cuttings may be taken off at three several seasons—June, July, and August, and should be selected from those which are taken off when the plants are cut back; they should be about three inches long, one half of it being placed in the soil in a common border, where the com-



post is tolerably light and rich, covered over with a hand glass, pressed close down to the earth, to keep the air out. These should be occasionally watered, and in a very few days the glass may be left off an hour or two when it is fine weather. It will be soon seen when they have struck, for they will begin to grow. There are many who put the cuttings round the edge of a pot, and take them into the greenhouse; there are others who put them out in a seed pan, with a glass that will come within the rim, and strike them in frames; there are others who do them in large quantities, prick them out all over an old hot bed, and keep the lights on

for a time, until they are struck; and some who plant the cuttings like the cuttings of dahlias, one each into a sixty-sized pot, and so save one shift. We approve of none so well as the first plan mentioned. When they are struck, they may be potted in sixty-sized pots, quite as low as they were in the border. They may be put in a shady place in the open air, and watered in dry weather, but they must be placed where the roots cannot enter the ground. As soon as the roots reach the side of the pot, let them be shifted to size forty-eight pots, and lower the stem in the soil to make the plant more dwarf. The Geranium thrives the better for this, for the stem will keep rooting up to the top of the soil, and it strengthens the growth rather than weakens it, though many plants would die under the same treatment. If it is to be grown with a single truss, pinch out the eyes of the side shoots directly they have four leaves, and continue the shifting as fast as the pots fill with roots. In wintering the plants, the house must never be allowed to get damp, but occasional fires must be given to dry the place, and, when the fires are lighted, there may air be given, but there cannot be too much air given at any time if the weather be mild, for it is destructive to the plants to get them drawn up weakly, and nothing but plenty of air can prevent this. But there is one great advantage to be gained in the construction of a house—the nearer plants are to the glass the better—and Geraniums would keep far better, all the winter, in a pit than a greenhouse, unless constructed on purpose for them. The shelves in a pit or greenhouse should be one above another, sloping the same as the glass roof, and the plant should be within a few inches of it; but a pit must have the means of being heated in frosty and damp weather, or the whole stock might be frozen or mildewed, and there must be the means of giving air all round the lower part under the shelves, or it will be unwholesome and damp. The plants must not be much watered during the cold months, and the glass must be shaded as little as possible from the light. Although it is not desirable to force them into growth in winter time, they will make some advance, and if the roots fill the pots, which is very likely, towards the end of the winter, they must be shifted into pots a size larger, but every fine day, when the wind is not north or east, they should be completely uncovered. If the plants are intended to be round and bushy, they must be moved repeatedly, so as to have all sides by turns to the light, and they must not touch each other. During all this time the side shoots, come when they will, must be stopped, that is, the ends must be pinched off before there are three pair of leaves.

In the early part of the year the plants will require another general shift, but, as the centre or upright branch alone is the one allowed to

grow, the side shoots will form a bushy foliage, as the leaves will grow their full size. If the plants have been as close to the glass all the winter as they ought to be, the shelves may require lowering, to give room for the additional height of the plant, which will now advance, and in the growing state they will be more tender, and must be kept perfectly free from cold winds and frost, but yet must have all the air they can get in mild weather. They will each throw up but one truss of bloom, and should be now carefully watched. They must not have the hot sun after the colours of the flower begin to show, nor must they from first to last have more fire heat than is absolutely requisite to keep out frost and damp. The flowers which are produced by plants thus treated will be nearly twice as large as those ordinarily shown, and in many cases the truss will be as large as three; the petals will be thicker, the colours much purer, and the flowers more in character, though they will not be always early enough for the May shows.

IN GREENHOUSES WITH OTHER PLANTS.

All that can be done with Geraniums when mixed with other plants is, to place them near the front window of the greenhouse, and give all the air you can give them by keeping the windows open whenever the weather will permit. They will bear less frost than almost any other greenhouse plant, and therefore the others will take no harm from cold while the Geraniums are safe. Care must be taken, however, to turn them round, so that all sides of the plant may share the front light; but all the care will not make them so perfect as they can be grown in a pit or house devoted to the purpose, as before described.

IN DWELLING-HOUSES.

Here the plan must be as nearly as possible assimilated to that adopted in the pit, except that, as air can but imperfectly be given in a dwelling-house, it is better in fine days to put them out of doors all the middle of the day. In other respects, such as the pinching out the ends of the side shoots, shifting where the pot is full of roots, and keeping the bloom to one truss, the treatment is the same.

BUSHY YEARLING PLANTS.

If, instead of pinching out the ends of the side shoots, you pinch off the centre one, and let the side shoots grow, you will have bushy plants, with several trusses of bloom, and though not quite so large as the others, still very fine as compared with the blooms of the plants which are larger and older, and trained for quantity of flowers; but the greatest care must be taken not to put them too close together, or they will damage each other, and not thrive.

It would be almost unfair towards Mr. Cock,

Mr. Gains, and Mr. Catleugh, not to give place to a short explanation of their plans,—of course they are very much abridged, but they contain the leading features of their management. We cannot as florists reconcile ourselves to the growth of any such monstrous plants at the sacrifice of the flowers, and therefore protest against it altogether; nevertheless, so much as they like to tell, ought to be told, whether we individually approve it or not.

MR. CATLEUGH'S PLAN.

"Place your cuttings in the open border in the course of July. When rooted, pot them in sixties, put them in a shady situation three weeks, then remove them to an open spot. At the end of September, transfer them to the house to winter. Stop them at the third or fourth joint and shift them into forty-eight pots, using a compost of turfy loam and sand; give them little air for eight or ten days, but after that, allow them as much as they will bear till the early part of December, when the pots will be well filled with roots, and the plants must be repotted in thirty-twos, *adding bone dust cautiously*, not allowing it to be near the surface, on account of its drying nature; stop the plants again, and maintain the temperature at forty-five degrees for ten days, and then allow it to fall to forty-two or forty. *Damp the flues twice or thrice every night, to keep the air moist,** and admit external air at the top when the weather is favourable. About the middle of February shift those intended for large specimens into thirty-twos, and vigorous growers into a size larger. *At this time tie each shoot to a proper stake.* In the beginning of April discontinue fires,† and commence syringing the plants overhead thrice a-week, and close the house at night. Continue this treatment for a month, damping the house every evening, and opening the top sashes every morning, and admitting as much air during the day, as may be done with safety.

When they show bloom, water freely, and shade with canvass. On housing the plants pick off all dead leaves, and when the green-fly appears fumigate with tobacco, taking care that the plants are dry; watering them well a day or two after. When done flowering, remove the plants to an open place for a fortnight, then cut them down. *Compost*—Two barrows-full of good maiden loam with the turf, and one of well rotted cow dung, three years old, one peck of silver sand, and one of bone dust.

For the winter repotting, add a little more sand. The cow manure should be frequently turned in winter, to destroy the worms and insects.

* It will be seen that we differ very much on this point, inasmuch as we take every means to prevent damp.

† How if we have such hard frosts as we have known frequently in April?

MR. COCK'S METHOD.

Strike the cuttings early in June, when rooted, pot in sixties, and place them in the shade. When they have taken to the pots, place them in an open spot, and as soon as they will bear the sun without flagging stop them. In September repot in forty-eights, and begin training. In December and January shift into sixteens, in which they are allowed to bloom; from the middle of July to the beginning of August, head them down and put in a sheltered situation; and when the shoots are nearly an inch long, shake the soil from the roots, and repot in the same sized pots. As shoots are formed, thin out with care. In the greenhouse the front sashes are kept open on all convenient occasions. In November stop the plants and put a stake to each shoot.* In December and January select the strongest plants and pot them in eights, applying additional heat that they may root rapidly. In February syringe in the afternoon, but soon enough to allow them to dry before night. In March repot in No. 2 sized pots and supply water freely; when the flowers begin to open, use a shading of cheese-cloth outside. Admit air before the sun has much power on the glass, which prevents in a great degree the attack of the green-fly. Success now depends on heating. Light fires at three or four P.M., and let them die out at nine or ten; light them again at three or four A.M. Keep the temperature through the night at forty or forty-two degrees Fahrenheit.

The soil must be prepared thus—chop turfy loam and lay in a heap, and shake up in form of a mushroom bed, some fresh stable litter. Well water the manure if the weather be dry, and prevent the liquid and steam from passing off by a covering of slates. Allow it to remain in this state fifteen or sixteen days, and then mix with it the same quantity of fresh loam. In a month or five weeks turn it over three or four times that the manure and loam may be well incorporated. At the end of twelve months it is fit for use. To two barrow loads of this add one of leaf mould and a peck and a half of silver sand."

Gains does not materially differ from these, and, so far as we can learn, goes between them rather than beyond either; but we so utterly despise the whole system of culture, which requires a stick to every branch, that we would rather not grow a Geranium at all, than consent to see men trifling away their time at tying them up, or see a collection discredited by the presence of such pots full of wooden stakes.

It will be noticed, that we treat the Geranium as a more robust plant. We care not how low the temperature of the pit or house is in winter,

* We abjure this system altogether, but if it must be done, it should be done long after the stopping because the shoots will be doubled in number.

so it be above freezing—thirty-five would please us much better than forty—but it must be considered that the growers already quoted regularly force them for the May show, and are frequently behind hand with them; thus we quote their treatment, or at least the outline of it, as directions for forcing the Geranium, rather than as a mode of growing them in the highest perfection.

SAVING SEED.

The very best mode of seeding the Geranium is, to save the seed from the plant which is the nearest approach to the proper form; the instant the flower is opened, or opening, take away the anthers with a pair of tweezers, without touching the pistil with the powder—indeed, if they are taken early enough, they will not have burst, and therefore cannot give off any powder;—this done, select a flower which possesses some fine quality, which you would wish to see coupled with a well formed flower. From this flower take the anthers when their powder can be rubbed off, and apply the powder of them to the pistil of the one prepared; the probabilities are, that the seed will raise you plants of better character than either of the originals—that is, the fine character of the flower whence pollen was applied will be more or less imparted to the one of finer form.

RAISING SEEDLINGS.

Sow the seed in a large sized pot or sowed pan, full of the proper Geranium compost, as soon as it is ripe and gathered, that is, from July to the end of August, but the sooner the better. It is the best and most natural of all seasons for seed to be sown where you have a chance of protecting it, for it is the season it would sow itself. Cover it lightly—but it should be covered,—and place it in the greenhouse or pit, somewhat in the shade. Take care that the soil never thoroughly dries, though it must not be soaked. When the plants are large enough to conveniently handle, say have four good leaves, they should be pricked out round the edges of large sixty-sized pots, three in a pot, and be continued in the greenhouse, but if this happens to be late in the winter, they would be better for a few days under hand glasses, as well as in the greenhouse. These will grow through the winter, and may be shifted, before the roots meet each other, to large sized sixties, or small sized forty-eights, one in each pot, and in the centre of the pot. The treatment thenceforward to be the same in all respects as young plants from cuttings, confining the bloom to the single truss; but as cuttings are wanted for increasing, it is better to let all the shoots grow, and merely pick off the side bloom buds the moment they appear, to throw strength into the others.

GRAFTING THE GERANIUM.

This is one of the fancies of the present day, but a very useless one with a plant which strikes so freely and grows so fast, nevertheless, it can be done, and has been done to produce two or three sorts, on one plant, whereas, looking at the quantity of stuff grown upon one plant when it is cultivated as a specimen, it would be quite as effective to put three or four plants of different sorts in the same pot, and not half so troublesome as grafting. There were some time ago many grafted Geraniums shown by Mr. Ausell, whose object seemed to be, to form a head of one variety growing on the stock of another, which had been grown up strong and tall, and so to form a regular standard tree. In this case, the stock was one of the fast growing varieties, and the heads were more novel kinds, but, the stock was not permitted to grow at all, any more than a briar stock is allowed to grow after it has been grafted with a rose. To graft the Geranium, then, the object is, either to have one variety forming a head on a strong stock, or several varieties on the same plant. In the former case, it is only to get the stock of the dimensions you require, and a scion which is the same size as the part of the stock it is to be grafted to. You may then either cut both with a long sloping cut, and fit them as if you were splicing a stick; or cut one wedge fashion, and the other into a notch, to receive the wedge, and so fit them together, that the bark may meet quite close all round; bind these neatly together, cover them with grafting wax as cool as it can be used, in a fluid state, with a brush, and leave them to grow. If it be intended to have several sorts on the same stock, select a stock with as many branches as you require sorts to be grafted, and fit a graft upon each branch, in the same way as we have recommended the standard to be fitted, and treat each in the same manner. The greatest care must be taken that the stock be not allowed to grow, and all the sorts grafted on a plant should be of similar habits; a slow grower and a fast grower will not do, because one would take the lead, and prevent the others from growing at all.

STANDARD GERANIUMS ON THEIR OWN
BOTTOMS.

To grow these, the middle shoot alone should be allowed to grow, and all others be pinched out as soon as they are large enough to take hold of; as soon as the top bloom buds show they must be taken off, and the shoot be kept growing until it is as tall as you require the standard to be. It may then be grown for the head, and when it has pushed three eyes above the parts where they have been all pinched out, the end may be pinched off and the eyes allowed to form branches. When these have shot out two eyes, they may be stopped to throw out

their side shoots, and such of these as are growing the right way, and are not in each others way, may be allowed to grow until long enough to form branches, when they may be stopped also. For the head can only be formed of few branches in the first instance, but stopped when long enough to throw out several laterals, or side shoots, each, and so, in time, to fill up a complete head.

APHIDES AND OTHER VERMIN

Will often infest plants which are neglected. At the very first appearance of these, the house or pit in which they are placed should be closed and fumigated with tobacco in the evening, and syringed with clear soft water the next morning; and if they have not totally disappeared, the operation must be performed again; but if all the holes in the house or pit be stopped, and tobacco smoke be created by throwing a handful on some hot coals, or by means of a pair of fumigating bellows, it rarely fails to clear the plants by one application or two at the most.

THE FUCHSIA.

The astonishing rapidity with which the varieties of these plants are now multiplying from seed, renders it all but impossible to distinguish one from another of the numerous kinds that are named; and each day produces us many additional claimants for notice. For our own part, we have in vain endeavoured to find a dozen such as we could safely recommend to our friends, or be pleased to grow ourselves; and every public show we attend proves more and more forcibly, that people ought to submit new things to some test before they let them out upon the horticultural world. At the West Kent Horticultural Exhibition, held at Greenwich, there were many varieties of the Fuchsia shown under high sounding names, purchased at liberal prices, and one short description would have done for nine-tenths; rough, self-coloured flowers, in unseemly bunches, at the ends of long straggling branches, without a solitary good point about them; foliage large and coarse, habit loose and very ugly. Yet we were assured that these worthless things cost various sums, from half a crown to half a guinea, and were strongly recommended by the nurserymen who sold them. Now, we hold it to be necessary that certain points should be warranted when a new variety comes out; and yet there are some who do not seem at all unwilling to warrant flowers to be "good show varieties," when they prove to be any thing but what is described. This we are bound to hope arises from the want of knowledge of what "good show varieties" mean. The Fuchsia is bidding fair to overrun the gardens with varieties not better than weeds. We

have already insisted that a good *Fuchsia* must possess certain points, as—

The sepals or outside must be a different colour to the corolla or inside, and the more different or contrasted the better.

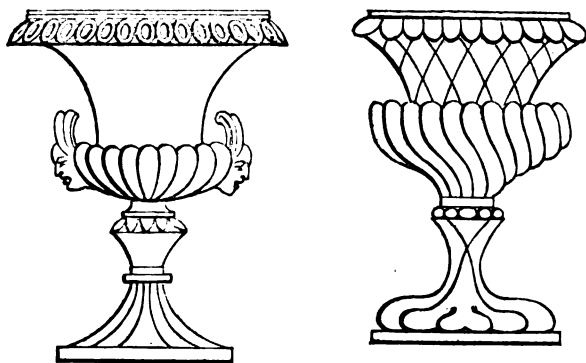
The colour must be pure, from the footstalks to the very tips, and all alike. No variety with green tips ought to be recognised at all.

The sepals should reflex, and show their inside surface, and all the corolla should be thus exposed to view.

If the sepals should be a white, or a pink, or a scarlet, the corolla to the white might be scarlet or blue, but to the pink or scarlet, it ought not even to have a red shade, but be a dark purple.

Whereas the majority of new *Fuchsias*, *St. Clare* at the head of them, have red sepals, and the corolla only a different coloured red, nay, hardly that. The characteristics of most of the new *Fuchsias* are, sepals dull red, very thick, rough, and coarse; the points a dirty green, and hugging close or hanging down; the corolla rather a better red, loose and ragged, or spreading; flowers hanging abundantly at the ends of branches, and nowhere close,—short lived, and therefore plant untidy directly after it begins blooming; foliage large and coarse, between a dull green and a dull brown. *Fulgens*, with its long brilliant scarlet flowers, ugly as may be its habit, is infinitely better than ninety-nine new varieties out of a hundred. It is impossible to find any excuse for their sale, or even for their being saved from the dung heap, except upon the principle of being different and worse than the original; and the similarity of the hybrids to one another is remarkable, yet every body who found something different from the parents fancied they had a right to name it, and sell it,

until, in all parts of the country, we are inundated with the rubbish we have been describing. We might go on with the number of points necessary to constitute a good *Fuchsia*, but that it is repeating half that we have already written. For instance, the flowers should come out at the base of every leaf, and the leaves should be all over the branch, from the extreme point to the place at which it joins the main stem. Then, again, the foliage should be bright, the plant bushy, the flower globular before it opens, that the divisions of the sepals may be wide. There are other points mentioned in our article on the Properties of the *Fuchsia* well worth the attention of those who grow them from seed, or who wish to discriminate in the choice of their collections. If we might advise those who wish to be very nice in their selection, we should say, buy none whose flowers come in bunches at the ends of the branches, unless it be the original *Fulgens*; none which have not two very distinct colours in their sepals and corolla; none which have large coarse foliage; none which have green points to their sepals. Persons will find their collections somewhat limited, but brilliant and beautiful if they will but grow them well. The smaller the plants, the better they would be, for very few have attended to the proper growth. If there be but a single shoot, let it be topped at four inches high, and continue stopping every branch as soon it is as long as you wish it to be. Prune out any branches that cross each other, or are in each other's way, keep them growing, and shift them as often as the pots fill with roots. Keep them dwarf, bushy, and beautiful, but as some of the kinds require rather particular treatment, we shall shortly take up the subject in detail.



ELIZABETHAN VASES.

WE give two more sketches of these drawing room ornaments without their glass covers, and we have others fashioned for covering the vases themselves with glass, in which the stand contains, instead of the rim of the Vase, the water. The above have glasses merely to reach the rim.

It should be mentioned, that *Roses*, *Geraniums*, and other fragile flowers, retain their beauty very much longer in these Vases, and that before any one goes to the expense of them, the experiment may be tried by filling a plate or dish with water, standing a small cup full of

violets in the centre, and covering them with any large tumbler or goblet, with its edge in the water; every time the glass is taken off the fragrance is remarkably powerful, but the effect of keeping them covered is the prevention of evaporation. We suggested to a reader and correspondent, who has already removed one of the greatest evils which attended the growth of plants in dwelling-houses, by inventing a new flower pot, the propriety of making some of these Vases, and we are happy to say, our suggestions will be acted upon. We are quite sure it will form a new era in the use of cut flowers, for although the principle is as old as the hills, people dislike trouble so much, and have such an aversion to any thing that looks like a contrivance, that not one in twenty would use the means, unless there was something novel in the appearance, and simple in the application. We shall give a sketch of the first that shall be made in this country.

HORTICULTURAL LITERATURE.—NO. II.

AN institution, calculated to benefit Horticulture and its dependants, is sure of an able advocate in the *Gardeners' Gazette*; and, accordingly, it has an article on the first meeting of the Philanthropic Society of Gardeners, which should not only be read but adopted by all who feel a pleasure or an interest in that science. An article on Bulbs (which we have extracted) is very important to buyers, and must remind seedsmen that their interests are not overlooked in the *Gazette*. The Horticultural Gossip will, perhaps, induce Mr. Harrison to procure an original article for his Cabinet, and the paper on the Duke of Bedford's Tenants will, no doubt, have its good effects, as we are quite sure his Grace will not allow them to be annoyed by the officious interference of underlings. In the *Gardeners' Chronicle* we have a long article upon New Zealand, which will be read with some interest by those who have an idea of colonizing. The paper on Draining appears to us more suited to a Far nung than to a Gardening newspaper, that, however, is a matter of opinion, and so also is the degree of interest which may attach to twelve columns of reports on Country Shows; for ourselves, we would rather have half the quantity of more useful information. The Continuation of Cemeteries, in *LOUDON'S MAGAZINE*, may be very interesting to those who contemplate a quiet resting-place in their own garden,—but to such as look to a Magazine for information on Gardening, the paper by Mr. Barnes will be more acceptable. As the best criticism upon PAXTON we have extracted an article upon Climbing Plants—but coloured illustrations form the principle feature in this Magazine, to test the merits of which, we would recommend the purchase of a

number, as description will scarcely do justice to botanical drawings.

From the Gazette.

ON THE KEEPING OF APPLES.—As far as the flavour and soundness of the fruit is concerned, and the time of keeping, the laying them on a dry, dark shelf, is as good as any mode; but when so kept, they shrivel and lose their beauty. If they are packed in a box, pan, or cask, with dry sand, the flavour and soundness are not only equally well preserved, but their original plumpness and beauty also. Bran or sawdust is not so good as sand, because it may grow damp and mouldy, and taint the fruit. Grapes and peaches, as well as apples and pears, packed in this manner, may be sent to any distance without injury; but for this purpose bran or sawdust is best, because it is not so heavy. When taken out of the sand for use, the fruit should be plunged into a basin of water, which will take off the grit. As apples and pears always undergo a slight fermentation after they are ripe, the effect of which is exhibited by a greasy appearance and feel on the skin, and a peculiar empyreumatic smell, they should always be suffered to lay exposed for a week or ten days before being packed for preserving. I will also take leave to state, what I know *every person* is not acquainted with—no pear, if gathered and eaten when fully ripe on the tree, is so good as when gathered as soon as it has attained its full size, and laid by in a dry place, until it is ripe. — *J. Hayward, Lyme, Aug. 30, 1843.*

ONE SHIFT SYSTEM.—We happen to be thrown among some of the earliest followers of the one-shift system, and see all the remarkable growth which is made at first, and which has made converts among those who never think of the future; but every now and then we miss some plants from the one-shift stock of a nursery where it has been most successful, and we find they go to a customer who never pays, but will take any thing that is sent him—the rubbish heap. We are not trifling; the most successful advocate we have seen is now losing them by sudden deaths, although they have grown to very beautiful specimens.

THUNBERGIA FRYERII is an exceedingly bright orange, with a pale centre, and forms a striking contrast with other varieties. It will be especially useful in collections of climbing plants among those with the dark centres.

STRAWBERRIES.—We can only say, that the theory of keeping the leaves on is very pretty, but that practice decides in favour of cutting them off at the proper season. We have seen them bearing year after year profusely under the old treatment; we have never had them fail, excepting under circumstances dependent on the spring; and we shall not alter our course until something more decided shall

establish the inefficiency of our old method. We do not recommend cutting the young leaves of the heart, but certainly all that have perfected their growth, that is to say, all the old foliage.

DAHLIA.—Sparry's Lady Antrobus is a very showy variety, very double, very round, and an acquisition. If the eye comes up, which we think it may, it will hardly be beaten in its way.

BULB PURCHASERS.—The period has arrived when the Dutch bulbs make an appearance in all the seedshop windows, and at which, those who bloom them in glasses or borders, should be looking out to make their purchases; but there is a description of persons who, instead of going to respectable dealers, lay by for sales, give for a few lots as much as they would have to pay at a first-rate shop, and run the greatest risk, or incur a certainty of disappointment and loss. The London seedshops, unquestionably, have the picked roots from all the Dutch houses, and Hyacinths never came over finer than they have the present season. After the prime roots are all gone, the refuse is offered to a lower grade of dealers, who pick the best of the bad, and the remainder, consisting of bulbs internally diseased, externally damaged, imperfectly ripened, cankered, or otherwise affected, are packed in boxes, and consigned to persons in London, for sale by auction. They are generally put up in lots of half a dozen, and bought at a higher price than would be charged by a respectable dealer for proper sound bulbs. Persons, therefore, cannot be too strongly cautioned against purchasing at auctions; we are going against our own interests in discouraging them, for they are always advertised, while the general dealers do not always advertise. Nevertheless, we are quite certain of two things, which are well worth people's consideration before they buy at auctions. First, that they cannot meet with sound and faultless bulbs at all; and second, that they must pay as high as the City shopkeepers would charge for first-rate picked bulbs of the same varieties. We were offered in the City, at sixpence each, the finest roots we ever saw of Waterloo, Groot-voorst, and other established favourites, and we found all things reasonable in proportion. It is a strange fancy to run after auctions, where any thing like a warranty is desirable, and particularly as we have seen Crocuses bringing eighteen pence a lot, fifty in a lot, when the best of the London dealers were charging but half-a-crown a hundred.

From the Chronicle.

STANDARD ROSES.—Whoever is desirous of forming lines of these, well-organised under the shortest notice, should bud early in June; cut all away, to force the inserted bud: it will grow

a foot and more the same year, and frequently produce a head of flowers. Most sorts (perhaps all of them) will yield to this practice.—*W. Brown, Merevale.*

MAGGOT IN ONIONS.—The ravages of this pest to the Onion tribe have become very serious. A plot of ground intended for Onions was well manured with rotten stable-dung, and thrown up in ridges to be mellowed by the winter frosts. At the proper season for sowing the seed I had the ridges levelled, and the plot divided into three parts: one part was covered with wood-ashes, another with soot, and the third was left as it was. The seed was then sown in drills; and it came up very well, and for a time they all appeared to thrive alike; that part sown with soot, however, soon took the lead; the wood-ashes were next; but the part that was dunged only began to show symptoms of maggots, and is now a failure. There were a few maggots amongst the wood-ashes, but not one amongst the soot.—*T. Appleby.*

MYATT'S PINE STRAWBERRY.—Deep trenching and manure (with early planting) will go very far to ensure success with any Strawberry, if the plants are not crowded; but as many persons may not have the dry situation recommended for their preservation in winter, I can inform them that the very finest unfailing crops, in my experience, are grown in a marsh that, after heavy rains or floods from an adjoining stream, will scarcely bear the weight of a man, and I have seen them produce their finest crop after lying under water for days or weeks, during a very wet winter. This occurs in Mr. Shepherd's market-grounds at Deptford, where they grow in the wildest luxuriance, and produce most prolific crops; the plants are renewed annually, and judging from these results I have hitherto deemed a moist bottom to be essential for this variety of my favourite fruit.—*M.*

MUSHROOMS.—Some people assert that the Mushroom, or that part which springs from, or appears above the earth, is the stem, or principal part of the plant, and those parts under the earth, its roots. If this be the case, the rules which regulate vegetable growth are totally departed from; for, as a stem, or principal part, with its appendages, advance from the earth, its roots spread in the earth in proportion and at the same time; but to aver that the roots will extend of themselves in the earth, without the stems, or its buds expanding, or advancing in growth with them, is nothing less than nonsense; and in this case the Mushroom, being the last part produced, after the plant in the earth extends in all directions, and goes through the various stages of growth, is evidently the fruit and flower combined; and as the plant is subterraneous, it pushes its fructifying part into the air to perfect its seminal organs, and resembles in this respect aquatic plants at the time of flowering, as they send their flowers above water

for the same purpose.—*E. Owens, in the Transactions of the Gardeners' Society of Ireland.*

BUDDING AND GRAFTING THE RHODODENDRON.—The Rhododendron in the autumn will bud as freely as the Rose, and gra t in the open air as easily as the Apple or Pear. The only precaution that is necessary in this operation is to take prominent buds from the first growth of this season, as many of the family have made a second growth this month. The Rhododendron being thin rinded it does best by side grafting, and buds of it also had better be inserted after the manner of side grafting, with a portion of the soft wood retained behind the bud; all autumn buds may thus be inserted. I scarcely ever used clay in the first instance for excluding the air from these experimental buds and grafts, so that with this useful precaution there will be no fear of success. The following observations may be useful to those little versed in these matters:—Insert autumn-grafts as you would buds, leave about an inch of the graft out, at the top of the incision, and use the firm part of this summer's growth for the stock. If the bark of the stock be very thin, or if it do not part freely from the wood, you had better put in the grafts and buds as in side-grafting, cutting out a thin slice, and preparing the grafts so as to fit the place, and tie rather gently, as the stock is soft, for fear of bruising the bark. If the graft be put in on the north side of the stock, it will be an additional security from the heat of the sun. The best grafting clay is made by putting a lump of soft clay in the bottom of a small pot, with a little water over it; then stir it with a stick until it is rather thicker than paint, and with a small brush made with stripes of matting tied to a small stick, paint over the tying, and while the paint is wet, dust a little dry sand or mould over it, and when it becomes dry no rain will wash it off, and the sand will keep it from cracking.

LAWNS—May be laid down with 1 lb. *Avena flavescens*, 5 lbs. *Cynosurus cristatus*, 3 lbs. *Festuca duriuscula*, 2 lbs. *Festuca tenuifolia*, 18 lbs. *Lolium perenne tenue*, 3 lbs. *Poa nemoralis*, 6 lbs. White Clover, 2 lbs. Small Yellow Clover, per acre, if his land is light; if heavy, he must leave out *Avena flavescens*, and increase his *Cynosurus cristatus*. This will give the finest of all turf; to be kept constantly mowed.

From the Gardeners' Magazine.

I well know it is an idea many people have, that it is loss of time to hoe before they have a crop of weeds; and they have encouraged their growth for a considerable time, as if they were in some fear of losing the stock of them. In good cultivation a weed ought never to be seen. I do not agree with these that tell us one good weeding is worth two hoeings: I say, never weed any crop in which a hoe can be got between the plants; not so much for the sake of

destroying weeds and vermin, which must necessarily be the case if hoeing is well done, as for increasing the porosity of the soil, to allow the water and air to penetrate freely through it. I am well convinced, by long and close practice, that oftentimes there is more benefit derived by crops by keeping them well hoed, than there is from the manure applied. By keeping the surface of the earth clean, open, and healthy, nature supplies herself: it is not only the means of eradicating weeds and vermin, but through it (stirring the soil) vegetables profit in every way; they are clean, healthy, and of a finer flavour. Had not our country produced weeds, I am apt to think we should never have thought of using the hoe, or any other fertilising tool. My rule is to hoe, fork, and stir the surface, at every opportunity, when it is in a proper state for performing these operations. Weeds or no weeds, still I keep stirring the soil; well knowing from practice the very beneficial effect which it has. It is attended with little trouble, and only requires to be adopted as a system. Raking the surface fine I have almost wholly dispensed with, in every department, as I have plainly seen the ill effects of it many times; and this is a season it must be much felt, particularly on all kinds of heavy soils: the heavy rains will run the surface together, and bind it so as to become caked, "livery," and "steely." By hoeing with judgment and foresight, the surface can be left even, wholesome, and porous; and three hoeings can be accomplished to one hoeing and raking. Much injury is done by raking the surface so very much, in more ways than one. It is not only the means of binding and caking the surface, but it clears the stones off as well. The earth in its natural state has stones, decayed roots, and vegetation, to keep it open and porous, and by their decomposition gradually to add to the earths of the soil. It also contains naturally numerous insects, worms, and moles. If the earth is sufficiently drained, either naturally or otherwise, and the surface kept open, there is no fear of suffering either from drought or moisture; and it is healthy for the animal as well as the vegetable kingdom.

JAMES BARNES.

Bicton Gardens, June 6, 1843.

Paxton's Magazine.

ON THE PROPAGATION OF A FEW CLIMBING PLANTS.—It is a fact with which almost every experienced grower of ornamental shrubs must be familiar, that the early productiveness of the plants he rears will be in great part dependent on the manner in which they are raised. A specimen shrub, raised from seed, is always much longer in coming into a flowering state than one derived from a sucker. This, again, would be far slower in blooming than one which layering had produced. And a plant raised by layering will generally be more tardy in developing

blossoms than one reared from a cutting, where the latter method can be employed.

But there is another circumstance attending the propagation of plants by cuttings which is very insufficiently known, or at least seldom duly considered; and this is, that a specimen reared from a cutting will be a longer or shorter period in bearing its flowers, according to the condition of the parent plant. Thus, if a shrub is in a peculiarly unhealthy, and consequently infertile state, or particularly luxuriant, and hence unable to bloom, the cuttings taken from it will grow into plants which will require a protracted course of treatment to render them prolific. On the other hand, if the parent specimen be in a remarkably free-flowering condition, the young plants produced from its cuttings will, when properly managed, bloom both soon and abundantly.

These are things, the right attention to which is of the first moment in the management of a collection. With reference to climbing plants, however, a further hint discloses itself to the initiated regarding the selection of cuttings for multiplication. It is that, to ensure speedy fertility, the cuttings should not only be prepared from those specimens which are disposed to bloom profusely, but that they be taken from the lateral shoots that are growing towards the upper extremity of the leading stems, and never from those principal shoots which issue at or near the base of the plant. The temptation to choose these last is sometimes strong, because they mostly appear more vigorous, and, by removing them, the plant would seem to be less robbed of its flowering branches. Still, as the principal stems or branches of a climbing plant never bloom till they reach a certain length, they should not be used for cuttings where early productiveness is desired.

By taking advantage of such circumstances as these, the strongest climbers may be had in flower in a dwarf condition; so as to take the appearance of shrubs, and also to become fit for training on low trellises in pots. The plan is likewise of much use in keeping up a succession of beautiful flowering plants, and bringing them into bloom considerably sooner than they would otherwise flower. There is nothing more annoying to cultivators generally than to have a number of plants about their place which will not blossom; and climbing species, as commonly raised, are especial causes of such annoyance.

To facilitate the procuring of quick-flowering specimens from climbers by cuttings, a plan has been pursued in a nursery near London, which we have had opportunities of frequently visiting. It has hitherto been confined to stove plants, and has, besides the above recommendation, the merit of saving both room and trouble. The ends of the young lateral shoots are chosen for operating upon, and at a joint only a short dis-

tance from the extremity, a quantity of damp moss is tied round the shoot, previously removing the leaves, and sometimes making an incision through the joint, or partially severing the shoot in the middle of the joint. In a moist atmosphere, roots are soon thrown forth into the moss, and the young plant is then cut off, carefully potted, and shaded a little for a time. It rapidly becomes established, and flowers the same season.

The practice has been adopted with *Ipomœa Learii* and *Allamanda cathartica*. It would equally suit *Stephanotis floribunda*, and many other species, both stove and greenhouse, where the air was kept sufficiently moist, and the moss constantly damp.

THE ONE SHIFT SYSTEM AND THE THEORY OF POTTING.

THIS subject is undergoing discussion in all quarters, and, like most other absorbing subjects, it gives rise to a good deal of extravagance—the advocates and opponents go wide of the mark,—each, in support of his own notions, misrepresents and mystifies the subject altogether. That plants may be grown very rapidly in a large body of soil it would be madness to deny; and whether that large body of soil were in a washing tub, an earthen pan, or in the earth itself, matters very little, presuming it is of the right sort, and well drained, and kept at a proper degree of heat and moisture. Turn a plant out into a conservatory, and the effect is apparent in a very short time. We know that constant and judicious attention would do wonders in the growing of plants under disadvantages. For instance, we have seen a *Camellia Japonica* grown ten years in a forty-eight sized pot, and looking as healthy as it was ugly. Now, here was a one-shift system with a vengeance. We have seen at Steel's nursery, at Richmond, the same thing practised to a large extent; a house full of plants in pots, not half so large as they ought to be, yet all looking healthy—many of them as green as grass to the very bottom leaf, and making shoots of twelve or eighteen inches in a season; but will any body for an instant defend such a system, merely because it was seen to answer under one man's management. Why, if those plants were neglected for twenty-four hours, they were sure to die. They must have lived upon water; another person attempting to grow plants five feet high in pots of the forty-eight size would be called mad. So with the plan of growing in large bodies of soil, assimilating them as nearly as possible to the open ground,—though, under one man's treatment plants may thrive, under another man's treatment they would die. We apprehend, however, that the strongest opponents to the one-shift system (which, properly interpreted, means shifting a plant at once into as large a pot or

tub as it is ever intended to be grown in, instead of shifting it for years from one size to the other until it was large enough), do not pretend that plants will not grow rapidly under it; but what is gained by rapid growth? We take it, that suppose we give the one-shift men credit for doing all they say they do, there will be as many refuse to adopt it as there will be consent to adopt it, for, in many things, the study is to stunt the growth, or at least to check it a little. There are many plants which grow quite compact enough without any extraordinary excitement, and the very idea of being obliged to lug about small plants in peck pots or large tubs, seems preposterous. So far as nurserymen are concerned, the whole thing appears ridiculous. It is the object of the trade to keep a large stock, and to keep their stock in as small a compass as possible, both for their own sakes, and for the sake of those to whom they have to send plants. They would derive no benefit, but rather an injury, from potting in very large pots or vessels; what would they be bettered by a plant growing twice the size? except here and there a specimen plant, what call have they for unwieldy pots and treble sized plants? It may be all very well for those who have faith in it, and want ramping plants, to go to work on the one-shift system, that is, supposing they are quite equal to the proper treatment of the plants grown under it; but we are pretty certain that it is an excellent turn for the nurserymen, and that more plants than ever will be wanted to make good those which are spoiled or lost altogether. In the Theory of Horticulture, Doctor Lindley has a chapter on Potting, which may be usefully studied. We give parts of it, that it may be read now, while the revolution in the system is said to be working its way. The subject has to be discussed a good deal yet, and the present paper is little better than a sort of opening article.

"When a plant is placed to grow in a small earthen vessel like a garden pot, its condition is exceedingly different from that to which it would be naturally exposed. The roots, instead of having the power of spreading constantly outwards, and away from their original starting point, are constrained to grow back upon themselves; the supply of food is comparatively uncertain; and they are usually exposed to fluctuations of temperature and moisture unknown in a natural condition. For these reasons, potted plants are seldom in such health as those growing freely in the ground; but, as the operation of potting is one of indispensable necessity, it is for the scientific gardener, firstly, to guard against the injuries sustainable by plants to which the operation must be applied; and, secondly, to avoid, as far as may be possible, exposing them to such an artificial state of existence. That the latter may be done more frequently than is supposed will be sufficiently

obvious, when we have considered what the purposes really are that the gardener needs to gain by potting.

"The first and greatest end attained by potting is, the power of moving plants about from place to place without injury; greenhouse plants from the open air to the house, and *vice versa*; hardy species, difficult to transplant, to their final stations in the open ground without disturbing their roots; annuals raised in heat to the open borders, and so on; and, when this power of moving plants is wanted, pots afford the only means of doing so. It also cramps the roots, diminishes the tendency to form leaves, and increases the disposition to flower. Another object is, to effect a secure and constant drainage from roots of water; a third is, to expose the roots to the most favourable amount of bottom-heat, which cannot be readily accomplished when plants of large size are made to grow in the ground even of a hothouse; and, finally, it is a convenient process for the nourishment of delicate seedlings. Unless some one of these ends is to be answered, and cannot be effected in a more natural manner, potting is better dispensed with.

"That it may be advantageously dispensed with, in many cases, is evident from several facts more or less well known. The nurserymen prefer "pricking out" their delicate seedlings into pans, or moveable borders, instead of pots; and they always thrive the better. In conservatories, the necessity of shifting plants from place to place may be often avoided; while, under judicious management, those which are planted in the open soil have greatly the advantage of others, both in healthiness and easiness of management; and there is no doubt that Pine-apples will succeed better unpotted, if planted freely in soil exposed to a proper amount of bottom-heat.

"The exhaustion of soil by a plant is one of the most obvious inconveniences of potting. The organisable matter in a soluble state, contained in a garden pot, must necessarily be soon consumed by the numerous roots crowded into a narrow compass, and continually feeding upon it. The effects of this are seen in the smallness of leaves, the weakness of branches, the fewness and imperfect condition of flowers, &c.; and the gardener remedies them by applying liquid manure, by frequent shifting, or by placing his plants in *panfeeders*, shallow earthen vessels containing manure, to which the roots have access through the holes in the bottom of a pot. It is, however, to shifting, more particularly, that recourse is had for renovating the soil; and this, if skilfully performed, without giving a sudden and violent shock to the plant, is probably the best means; because the roots are thus allowed more liberty of distribution, and the earth is kept more open (more permeable) than when consolidated by repeated applications

of liquid manure. There is, however, a difficulty in shifting plants, without injury to their roots, in the midst of full vegetation; and at such times the application of liquid manure is preferable, when the soil requires renovation.

"It is not, however, by mere exhaustion that potted plants render the soil unfit for their support. Every one knows that the soil of a farm will not bear, year after year, the same kind of crop, but that one kind of produce is cultivated on a piece of ground one year, and is succeeded by some other kind; which practice, in part, constitutes the important system of rotation of crops. Not, however, to refer to matters extra-horticultural, it is notorious that an apple orchard will not immediately succeed upon the site of an old orchard of the same kind of fruit, and that no amount of manuring will enable it to succeed; a wall border, in which fruit trees have been long grown becomes at last insensible to manure, and requires to be renewed; and, not to dwell upon an undisputed fact, Dahlias do not "like" the soil in which Dahlias were grown the previous year. This class of phenomena cannot be explained upon the principle of soil being exhausted, because that exhaustion is made good, and yet to no purpose, unless we assume that land contains something mineral which each species prefers to feed on, and which is not contained in manure. But the slender power of selection possessed by the roots of plants would be unfavourable to this supposition, even if it were open to no other objections.

"It has of late years been thought that the excretory functions of the root would explain the deterioration of soil, and that the reason why plants cannot grow year after year in the same soil, if it and their roots are disturbed, is, that, under such circumstances, they are perpetually brought into contact with the matter of which nature had previously relieved them; this matter being assumed to be unsuitable to themselves, although harmless to different species. The subject has been hitherto so little investigated that it is not safe, perhaps, to take it as the basis of a theory; but it certainly appears to offer a more probable explanation of the deterioration of soil than any other yet proposed. There are those, indeed, who seem willing to deny altogether that soil is deteriorated; and cases are adduced of Peach trees not repotted for twenty years, which did not die; of Strawberry beds not renewed for a long series of years, which still bore fruit: but I do not know that any one ever asserted that trees would perish if replanted in their own deteriorated soil; it has only been said that they would become unhealthy and unproductive, and I think few gardeners will deny that. Neither has it been pretended that the root-secretions of every plant are deleterious at all. It is quite conceivable that one plant may secrete a deleterious matter that is very slowly decomposable, but which may, nevertheless, be

soluble enough to enter into the food of other roots; and in such a case an injurious effect may be produced: while, in another case, the secreted matter may be rapidly decomposable, when it will enter into new combinations, and lose whatever deleterious property it originally possessed, if any. At all events, be the theory what it may, it is an undoubted fact that soil is deteriorated by a plant which has grown in it for a long time; and that, to be maintained in a healthy condition, that soil must be changed. This explains why potted plants, carefully attended to and often shifted, are so much more healthy than those treated otherwise. It is not, however, merely for the purpose of removing deteriorated earth or adding manure, that shifting is important; all potted plants have in time their ball of earth, by the continual passage of water through it, reduced to a state of hardness and solidity unfavourable to the retention of moisture or the growth of roots; and this is of course cured, if the operation of shifting is judiciously performed. I must, however, confess, I *have* seen gardeners contented with lifting a plant, with a hard old matted ball, out of one pot into another of a little larger size, shaking some particles of fresh earth in between the ball and the side of the pot, and pressing the whole down with as much force as the thumbs can give.

"It is found that the roots of potted plants invariably direct themselves towards the sides of the pot, as must, indeed, necessarily happen in consequence of their disposition to grow horizontally. Having reached the sides, they do not turn back, but follow the earthenware surface, till at last they form an entangled stratum enclosing a ball of earth; then, if not relieved by repotting, they rise upwards towards the surface, or they attempt to force themselves back to the centre. The greater part, however, are always found in contact with the porous earthen side of the vessel; and especially all the most powerfully absorbent, that is, youngest parts. They are, therefore, in contact with a body subject to great variations of temperature and moisture, in consequence of exposure to the sun, or to a dry air in motion, unless in those rare cases where the air is kept by artificial means shaded, and uniformly damp. By these means, in a dry summer day, when the leaves are perspiring freely, and therefore requiring an abundance of water from the roots, the latter are placed in contact with a substance, whose moisture is continually diminishing; or in a greenhouse, where the pots are syringed, the heat of the earth in contact with the roots is lowered by a copious evaporation from the sides of the pot, just when, in nature, the bottom heat should be the greatest. The evil consequences of this are well known to gardeners, who never take any sufficient precautions to prevent it. Greenhouse plants exposed to the

open air in summer always suffer severely from the irregular condition of the sides of the pots; whence the common practice of plunging them in the earth, for the purpose of bringing them into the condition of plants growing in the open ground.

"This is, however, attended with some disadvantage; for the plants root through the bottom of the pots, or over the edges, among the earth in which they are plunged; and, when taken up in the autumn for removal into the greenhouse, they must have all such roots cut off again; for there are no means of bringing them within the limits of a pot. For these and similar reasons, no good gardener will expose his greenhouse plants to the open air in summer, *if he can help it*; unless they are duplicates, or unless there is some object to be attained very different from the strange notion that they are hardened by this process. The effect that is really produced upon them is, to give them a sort of artificial winter in summer, that is, to expose them to a period of comparative rest from growth, which, in many cases, is useful.

"Of course, the inconveniences now alluded to are principally sustained by plants in small pots: when the quantity of earth is considerable, as in tubs, or the largest kinds of pots, the loss of water through the sides is of little moment; and the variation of temperature is more than counteracted by the large surface exposed to the direct influence of the solar rays. In these cases, the perfect drainage of superfluous moisture is often of the greatest service. Mr. Knight, indeed, assures us that "plants of every species are more or less affected, but not at all injuriously, by having the sides of their pots fully exposed to the air. The taste and flavour of the peach and nectarine, and still more of the strawberry, are greatly improved; and the fig-tree in the stove is made to afford a longer succession of produce, owing to the succession of young shoots, which are caused to spring from its larger branches and stems; and, in all cases, *when trees can be made to retain their health*, in exposed pots, the period of the maturity of their fruit is very considerably accelerated."—*Hort. Trans.*, vii. 258.

"It seems to be nothing but the complete drainage to which they are then exposed, that makes the orange and all its tribe, naturally inhabitants of the hill sides of the temperate parts of Asia, thrive best when the roots come in contact with the sides of the pots, &c., in which they grow. In all cases the drainage should be most carefully secured, by placing an abundance of broken tiles, potsherds, &c., in the bottom of a pot, so as to prevent the stagnation of water about the roots.

"Mr. Macnab, in his excellent practical treatise upon the cultivation of Cape Heaths, points out very forcibly the value of good draining to that class of plants. There is scarcely any

danger, he says, of giving too much draining; and, in order to effect this essential object still more perfectly, he, in shifting his Heaths, constantly keeps the centre elevated above the general level of the earth in the pot or tub, so that at last each plant stands on the summit of a small hillock.

"In order to counteract the risk of excessive drainage, without in reality diminishing it, great advantage is derived from the introduction into the earth of fragments of some absorbent stone. Mr. Macnab uses "coarse soft free-stone broken into pieces, from one inch to four or five inches in diameter;" because in summer these stones retain moisture longer than the earth, and in winter allow a free circulation of any superabundant moisture.

"If woody plants are allowed to remain growing in the same pot for many years, as is sometimes the case, one of two things must happen; either the roots, matted into a hard ball, become so tortuous and hard, as to be unfit for the free passage of sap through them; or they acquire a spiral direction. In either case, if such plants are turned out of their pots in a conservatory, or in the open ground, with a view to their future growth in a state of liberty, new roots will be made with difficulty, and it will be a long time before the effects of growth in the free soil will be apparent.

"Where the spiral or corkscrew direction has been once taken by the roots, they are very apt to retain it during the remainder of their lives; and if, when they have become large trees, they are exposed to a gale of wind, they readily blow out of the ground, as was continually happening with the *Pinaster* some years ago, when the nurserymen kept that kind of fir for sale in pots. In all such cases as these, the roots should be carefully disentangled and straightened at the time when transplantation takes place.

"If, however, a potted plant is managed in the most perfect manner, no such entanglement or coiling up will take place. To be managed perfectly, a plant when young should be placed in as small a pot as it will grow in, and it should be gradually and successively transferred to larger pots as it advances in size. If this be done, the warmth to which the pot is exposed will be more immediately felt by the roots; the latter, as they grow, will ramify regularly all through the mass of earth, which, moreover, will be thoroughly drained; but if, on the other hand, a very small young plant is placed at once in a large pot, and left to grow there, the drainage will be less perfect, the large mass of earth will be less sensible of the heat to which it is exposed, the roots will from the first take a horizontal direction towards the outside of the pot, and, once there, will follow its surface, as has been already stated, exhausting the small quantity of earth with which they are then in contact, and profiting little or nothing by the

main body of soil in the interior of the pot. As the proper manner of managing potted plants is of the first consequence, I transcribe the following mode of treating the Balsam, from a very sensible paper by the Rev. William Williamson:—

“As soon as they have got four leaves I transplant them singly into the smallest pots I can procure, and in such a manner that the stem of the plant may be covered somewhat more than it was at first, and then all are to be again placed in the frame. In a short time, if there be a sufficiency of heat, that part of the stem which is covered with the mould puts forth fibres, by which nourishment is conveyed more immediately to the principal stem of the plant. As soon as the plants are a little advanced in growth, they are again removed (if possible without disturbing the earth) into somewhat larger pots, still planting them rather deeper than before. The same process is repeated five or six times, till at last, they are removed into their final pots. I have found it best to give them their last removal after they have opened their first blossoms, as it gives additional brilliancy and size to the flowers. By following this method the plant acquires extraordinary vigour, throwing out its branches from the surface of the mould, exhibiting flowers nearly as large as a full-blown rose, and a stem measuring two and sometimes three inches in circumference.” (*Hort Trans.*, iii. 128.)

“The plan of continually sinking the stem with every succeeding potting, is useful to the Balsam, because it puts forth roots in abundance from its stem; and to all plants having the same property, the same practice is desirable: but not to others which, if their stems do not root as fast as they are buried, will suffer injury by the sinking.

“It is by paying constant attention to the shifting of the growing plant, by the employment of a very rich stimulating soil, and by a thorough knowledge of the kind of atmosphere which suits them best, that have been obtained those magnificent Pelargoniums, Cock’s-combs, Balsams, and similar flowers, which have so often and so justly excited the admiration of even the most experienced gardeners.”

PROPAGATION OF THE VINE.

A CONSIDERABLE number of articles have appeared in various periodicals, upon *grafting* the Vine, with the view of multiplying the varieties in a house, or of substituting new ones for those already existing. All of these may be ingenious, curious—nay, to a certain degree, successful. To impugn the practice of any one is illiberal; and many effect that by skill in manipulation, which would inevitably prove a failure if attempted by the inexperienced.

But be this as it may: if any one be in good

earnest to change his stock, or to add to his variety, he will, during the month of May, have the best chance of success. Inarching *with*, and *on*, the green wood, may be relied upon: all that can be required are one or more healthy plants, in pots, of the varieties to be substituted, each with a good green shoot, the produce of the present season; and a vigorous growing shoot proceeding from the old Vine, to serve as a stock.

If it be the object to renew and replace a Vine entirely,—suppose, for example, the substitution of a Hamburg for a White Frontignac. The latter is much inclined to send up strong succession shoots, from the lower part of the stem, near the root in the border: let one of these—a third of an inch thick, a yard long, firm in texture, though quite green and juicy—be taken for the stock; it may be, perhaps, a month or five weeks old. In a 24 size pot, there shall be a young Hamburg, raised last year, cut down in February, and now having a green shoot two feet long, and as thick as a goose-quill. Place these two green shoots side by side; lay them together in a position wherein two or three inches of each may be in close contact at the strongest part of the shoot, which will form the scion. Pass a ligature round the two, to secure the stems in this required situation; then cut off, with a small and very sharp knife, a portion of the Frontignac, to include not only the bark, but some of the green (*cellular alburnum*), being careful to match the breadth of the slice, as correctly as may be, with that of the Hamburg scion, which then is to be cut one-third through its substance. An inarch, well performed, may succeed, though the wounded surfaces shall not exceed one inch in length; but as it is desirable to bring a large surface of the alburnous matter of both stock and scion into close contact, the length of the slice to be removed from each should not be less than two or three inches. Previous to the operation, a string or two of soft, tough bass-matting should be wetted, and lie in readiness; and as soon as the removal of the bark has taken place, the wounded surfaces should be brought closely together, (the bark of one side, at the least, touching to the full extent of the cut), and the ligature passed firmly and flatly round the stems. In finishing the bandage, both ends of the bass should be wound near to each other, and twisted to the size of stout packthread, then tied in a firm double knot. A good handful of soft wetted moss should then be placed about the inarch, and secured by another string, but not very tightly. This moss ought to be kept moist for three or four days, and shaded daily, if the sun shine upon it. In selecting a shoot as the stock, and a plant as the scion, the former, though perfectly green and juicy, might always be more firm than the latter: the green shoot of the scion might be a fortnight or more younger,

but it ought to possess sufficient firmness of texture, to allow of a steady degree of pressure in the acts of cutting and binding.

I have seen a shoot of a *Constantia*, not the sixteenth of an inch in diameter, secured to a strong lateral of a Syrian or Nice, half an inch broad, which in the same summer received so much support, that it enlarged to the breadth of one-third of an inch, ripened its wood, and bore many perfect clusters, before it had been seventeen months on the stock.

Two more points remain to be mentioned. At the time of inarching, the stock should be stopped a few points above the junction; and in a day or two after the operation, the extreme point of the scion may be pinched off. If the latter begin to swell before it break its main eye, the certainty of success may be augured; and as soon as that eye shall push, the stock should be cut back to within two inches of the junction; but it will not be advisable to take off the bandage, till the wood swells and requires space; then, a fresh piece of wetted bass should be applied; and, above all, it will be highly prudent not to sever the scion from its own stock, till the wood of both be ripe in autumn. Many a fine inarch has been rendered torpid, perhaps lost, by such needless haste.

After all that has been said or written, this mode of inarching green wood upon green wood, is at once the most certain and efficient practice. Its success is little doubtful; and if the stock be vigorous, the results are rapidly visible: these are vigour and dimensions of rod, and a rapid development of fertile eyes. These facts are confirmed by unerring experience, and we much desire to impress them.

GARDENERS' AND STEWARDS' PROVIDENT AND MUTUAL INSTRUCTION SOCIETY OF IRELAND.

We have already stated that the objects of this Society are—"1st. To raise by voluntary subscriptions a fund for the maintenance of superannuated Gardeners and Land Stewards, for the relief of their widows and orphans, and to be bestowed as premiums for length of service and good conduct. And Secondly—by mutual instruction to extend the knowledge of farming and gardening in all their branches among the members." Of the manner in which this is carried out we have already given several specimens. Here are more from their last monthly publication.

DAIRY MANAGEMENT.

I found that in June and July the fresh butter soon acquired a strong taste, which led me to inquire into the dairy maid's plan of management. According to her report, every thing was correct and regular, and her reputation was so high in such respect, that it was almost an

affront to call any thing in question, and I set it down, that as I had but two cows, some part of the cause of ill flavour might be owing to the small quantity of milk. I next concluded that it was altogether owing to the air contained in the butter, assuming that the dissolved salt had no right to be blamed, and that the best remedy should be such high pressure as would altogether exclude both air and moisture.

I had the butter when newly made, put into a cloth, and pressed by a strong screw while any moisture oozed from it, and the cakes of butter were then put into a vessel of strong brine, in which they remained until wanted for use, and the flavour was as sweet in ten or twelve days as when the butter came from the churn.

I think the plan of pressing butter as beneficially practicable for cask butter as for the fresh, and if the dairy is on a sufficiently large scale to cask the butter, the difference of price between rancid salt butter, and salted butter preserved from rancidity by pressure, would soon compensate for the cost of a press, and the screw hoops necessary to sustain the cask into which the butter should be put. We are aware that the Dutch profit considerably by their ingenuity in this respect, and that at least, for the first day their casks of butter are opened, it brings two-pence per pound more than the English rolled fresh butter. If the Dutch butter was not pressed, it is not likely that it would bear to be put into casks, as, instead of salting it as we do, they milk their cows into vessels wherein some nitre is dissolved, and the preserving quality of nitre is by no means equal to salt, neither will their butter keep after being exposed to air, so that it would not be fit to stand the counter like our salt butter. If butter is salted and pressed immediately it parts very little moisture, not enough to be at all discouraging from an apprehension of loss of weight, as far as I can judge of an experiment on a small scale, but on a large scale, such a point (and it is a very material one), must be referred to experiment—and by any who have cheese presses this point may be easily ascertained. There will be some loss of bulk, as a great deal of air will be excluded, but the salt will not leave the butter except its pressure is delayed and the salt dissolved; so that, when rightly managed, there has no right to be much loss of weight, but even if there was to be a trifling per centage of loss of weight, the difference of price ought to compensate; neither would the liquor pressed out be a loss, as it would be nutrition to the pigs.

It is of great consequence to use pure salt: beware of the fine English salt, as it is strongly suspected of being impure; use Irish made salt, it may be a little dearer, but there is no alloy of either earth or magnesia in it. Believe me, that it is not for nothing there are such heavy complaints of the salt in Carlow and Cork. G.

ITALIAN RYE GRASS.

The utility of the Italian rye grass is so fully established, either as a green or hay crop, it is unnecessary to say any thing further on that head. September is one of the best months for sowing the seed in land where early potatoes have been removed. To have a remunerating crop, and give it a fair trial, the land should be rich. An intelligent correspondent informs us, (and he has cultivated Italian rye grass extensively), "that it is his opinion the plant derives more nourishment from the surface than from the soil, and seems satisfied it is not that exhausting crop that it might be supposed it was from its large produce." He states he has found *Guano*, and other fertilisers and top dressings have renewed the vigour and luxuriance of the crop. The quantity of seed per Irish acre is four imperial bushels, and the mode of sowing and laying down, the same as other grass seeds.

LUCERNE. (*Medicago Sativa*.)

We have been led to ask why it is that Lucerne is not more generally cultivated in Ireland. Its utility as one of the most valuable green crops is indisputable. Our climate is well suited to its growth; and there are few farms of any extent but could afford a soil suited to it.

We find Lucerne does best in a sandy well prepared and rich soil, made deep by trenching, though we have seen it doing well in strong loams, but they are not so well calculated for the after culture of the plant, as it will require to be cut, scuffled, and moulded at least once in the season. I will annex a few simple directions for the culture of Lucerne, in the hope that my so doing will induce particularly the small farmer to try its utility.

Prepare a bed four feet wide, and of convenient length, by digging it deep, and add in the digging four inches of short rich manure all over the surface; then mark off the beds in drills, twelve inches asunder, and one inch deep, and sow the seed thinly in them, and cover with the garden rake. (During March, April, or May, is a proper time to sow the seed.) If the season prove dry, give them occasional watering once or twice a week, and keep the seed free from weeds, and the surface rough by the use of hoe or fork. In September or October prepare to put out the Lucerne plants thus grown in the following way:—the ground previously trenched is to be opened in drills, two and a half to three feet asunder, the drills as large and deep as those used for turnip, and filled with short rich manure, closed and flattened on top by the back of the shovel; in the centre of the drill dibble in the Lucerne plants at six inches apart, giving them water immediately after planting; they are to remain so till the April following, when the Lucerne may be cut for use—(the first cutting.) As the produce of the

drill is cut, the mould should be stripped from each side of it, but so as not to injure the roots of the Lucerne, and by the use of a fork the body of the drill loosened, and some rich manure added to the roots of the plant, and then moulded up again.

The Lucerne being a perennial plant will last and continue to give a most abundant crop, and under the above management will yield three good cuttings from April to October, and is one of the best artificial grasses for either milking cattle or horses—or, in fact, for every description of stock.

In the way I have described, 2 lbs. of Lucerne seed will yield plants sufficient for one acre, and the probable expense would be about 1s. 4d. per lb.

T. W.

Being rather short of stable manure in May last, I tried the effect of *Guano* on turnips as a garden crop, by having the soil well prepared by deep digging, levelling, and raking it. I put on the surface soil at the rate of 1 lb. per square perch of *Guano*, and raked it in, six days after sowed the seed, and watered immediately. The seed sown vegetated, and the crop assumed a most luxuriant appearance and deep green colour. The turnips were much earlier and finer in size and flavour than those cultivated on stable manure.—T. W., *Artane, August*.

A Bed for Pinks is generally formed thus: four feet wide, and of a convenient length, (to be determined by the stock to be planted), the first line at either sides of the bed to be six inches from the sides, the plant in the interior of the bed to be eight inches apart in the lines, and in putting them down break the banks or lines thus

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Compost for Pinks can scarcely be too rich; it is formed two parts old cow manure, one part rich maiden mould (sandy), the remaining part sea or river sand for drainage, well mixed together, and placed eighteen inches deep in a bed, as above.

We should just reverse it, if the loam were what we are always recommending, that is, the first or top six inches of a meadow, rotted; and we are almost inclined to think the writer meant two-thirds loam, and one-third cow dung. However, be this as it may, old cow dung rotted into mould is one of the most harmless of all manures, and we are not even prepared to say, that a pink would not grow in all cow dung. These practical papers are doing a great deal of good, and we heartily wish there were a similar society in every considerable town and city in Ireland.



STRELITZIA REGINA.

ONE of the most common, but singular, of the old stove plants. It is a free grower in plenty of heat, lasts a long time in bloom, and is, in its flower, very like the head of a bird. There are several varieties, but they only differ in the size of the leaf, and in a very trifling degree in the colour of the bloom, which is orange colour and purple. The plant will keep, but neither grow

freely nor flower in an ordinary greenhouse, but it is almost the first plant we should think of procuring for a stove. The ordinary soil for stove plants—peat, loam, leaf mould, and dung, agrees with its constitution, and no plant is more easy to cultivate. It propagates itself by off-sets, which soon fill the pot, and will separate as easily as those of any ordinary herbaceous plant.

GLENNY'S GARDEN PRACTICE.

THE following papers which, by the way, are destined to appear monthly, instead of in a small volume as I first intended, are, literally, what their title imports. They are a sort of memoranda of what I have done, and what I recommend others to do, if they are content with ordinary success. I have taken a year in which I was my own gardener, with half an acre of ground, a south wall, a greenhouse, large enough to swing a cat in if necessary, but certainly not sufficiently large to grow plants on the one shift system, two or three garden frames, some hand glasses, and a sort of turf erection, which I dignified with the name of a cold pit, and covered with a glass sliding top. I, nevertheless, contrived to equal all, and beat some, of my neighbours, whose establishments were more complete, and who had, which I had not, a gar-

denier to manage them. I have called it "My Practice," as the most appropriate title, though it was suggested that, as it would unquestionably, in many cases, take the place of Abercrombie's, I should call it my "Every man his own Gardener," a very good title had it not been spoiled.

If I were inclined to quarrel with a title, as carried out by Mr. Abercrombie, it would be for calling a work, Every Man his own Gardener, when himself, his interpolaters, and successors seem to have provided for Every man his own Every thing—that is to say, a work with a title implying that a man who knows nothing of gardening should be "his own gardener," whereas the book is literally crammed with directions which apply only to places in which half a score of gardeners *must be kept*. Not content with this, there are instructions for

making every man his own nurseryman. A work with such a title should, in my opinion, comprehend, at most, those things that can be accomplished by one man, for in directing operations for places where a multiplicity of hands must be kept the title belies itself.

I propose to give such directions as are necessary to a person who intends working himself, who has as much ground as he can manage, laid out in flower garden, kitchen garden, and orchard, a greenhouse, a cold frame, and the means of making a hot bed; leaving nursery work to those whose trade it is, who can supply the small wants of a garden much cheaper than it can be made to supply itself; and consigning hot-houses, stoves, peach-houses, pineries, cherry-houses, and such like appendages, to the care of first-rate men, who are alone fit to manage them, and who want no assistance.

If there be any thing to recommend my book, it will be the fact of my having gone through all the business myself which I recommend to others; and, although I will at once admit there are twenty ways of doing the same thing to produce the same result, I give such as I have found to answer under most circumstances, and not altogether fail under any.

I intend to add to each month's directions a list of the best of the subjects which I propose to be procured; that is to say, in planting fruit trees, I shall propose the best I know of for the particular purpose. If, in giving directions for sowing or planting, I mention the seeds and sorts I should recommend, it must be taken for granted that I mention the best I know of, and I have taken some pains to make myself acquainted with the principal varieties which excel in England. But I wish not to set up my judgment against nurserymen, who, if informed of the particular locality and circumstances of the place at which they are to be grown, may often suggest an alteration to the advantage of the buyer, and who are always, notwithstanding all that has been said to the contrary, interested in the well doing of all they sell. Again, I confess that, extensive as my experience may be, there are those who have thought my approval of small consequence, and have not cared to give me an opportunity of judging, while I, believing that in the present abundance of good things I could do without theirs, have been quite careless about the matter. In nine cases out of ten I have found there was ample reason for not submitting them to me, as the owners have reaped a sort of harvest among persons, who, had I given my opinion first, had not been purchasers.

If, therefore, in lists of flowers, plants, fruits, seeds, or other subjects, I omit the mention of any thing very good, the raisers who know where to find me, may either thank themselves for the lack of notice, or impute it to my limited

knowledge, whichever they can best reconcile to their notions of propriety. It is certain, that in a general way a really good flower, fruit, or vegetable, finds its way to me somehow, and I certainly should not feel satisfied to recommend any thing of the superiority of which I had not first convinced myself.

As I trust this work is destined to come before the public in a permanent form at some future time, and errors will occur in a first edition, I shall thank any one who can suggest an improvement or correct an error; and with a sincere hope it will be useful to a large class who have but small incomes, small gardens, and small portions of time to spare, I submit the first of twelve monthly parts.

G. GLENNY, F.H.S.

FIRST OPERATIONS IN A GARDEN.

Whether a man undertakes to make a new garden, or to restore an old one, the first thing he should attend to is the drainage of the ground. He must not persuade himself, that because his ground lies high, or on a good slope, it is therefore dry, for, in some places, the springs may be found at the top, or high up the side of a hill, and the ground may be, a large portion of the year, a complete swamp. It is always better to employ a man used to the work than to do this ourselves, as he will, in an instant, see which is the best part of the garden whereat to get rid of the water that may drain from the land, and in what directions the drains had better be made. If, however, a man be determined to drain it himself, in most cases, the lowest part of the ground will be the best place at which to carry off the water, and the drains must be dug accordingly, that they may relieve every part of the ground. There are many ways of draining: some use drain tiles, of the form of half a pipe \cup , which are laid down at the proper depth, and another laid on the edges \cap , which forms a whole one \bigcirc ; however, where drainage is of the most importance, it is easiest managed, that is, in stiff clayey land. A trench must be dug with a trenching spade, two feet six inches to three feet deep, narrow at the bottom; this should have eight inches deep of large stones (if they can be had) at the bottom, if they cannot, use the clippings of hedges or faggots, and cover in with the soil. With regard to the direction of the trenches, that must depend on circumstances, they must have a fall, however slight. If the ground be level, or you must get rid of the water at a higher instead of the lowest part of the ground, the trench must be deeper as it approaches the place where the water is to run off. If it happen that one end or one side of the ground is bounded by a ditch, it may be sufficient to run three or four trenches across or along the ground into such ditch, or if there be none, it may be necessary to make one, but, if possible, get some outlet for the water,

though if there be none, the ditch must be large enough to take it. If one corner happen to be the lowest, or the place where it must run off, there may be one main drain from the highest point to the lowest, and other drains at proper distances, to communicate with it; and, however unwilling we may feel to undertake such a job on entering a concern, it is a fact easily demonstrated, that one-half the gardens which are said to be worn out or unproductive, require nothing but draining, dressing, and trenching two spits deep, turning the bottom soil to the top, to unmake them all that can be desired. The reason why a drain must be two feet six inches to three feet deep is, because, in all ordinary trenching, the ground is turned up eighteen inches, and disturbed another six by loosening the bottom. If, as is sometimes the case, the soil is not good below the first eight or ten inches, trenching will do mischief. In such cases, although trenching may be recommended as a general operation, it must not be done. In like manner, although we recommend draining, there are circumstances under which it can do no good; but these are exceptions, and the owner will soon find them out if they exist. Generally speaking, if it have not been already done, draining and trenching are the first and best operations in a new or neglected garden.

DIGGING and DUNGING or DRESSING.—The digging and dunning of ground are very common, though very necessary, operations in a garden, and require but little instruction, but as it is one of the operations which come into use this month, we merely offer the novice a few hints. In digging a piece of ground it is requisite to remove one spit or spade-full of earth, in width, all along the end you begin at, and wheel it to the end you are going to leave off at, so that you, in fact, make a channel or trench, one spade deep, all along the end you commence at. You then put your spade in about as far back from this channel or trench, as you think you can lift up the soil well, and, bending the spade handle back, you release the spadefull of earth, which you then lift, and, by turning the spade over, you put the bottom of the earth at the top, and the top at the bottom, in the trench which you had made; you go all along the trench which you thus fill, and leave the new trench, which you made by digging, one spit backward. This you continue until you have come to the other end of the piece of ground, when, of course, the last trench remains. This is to be filled with the soil first wheeled to that end from the other, and the work is all done. If the ground is to be dunged at the same time, the proper way is, before you begin to dig, to spread the quantity of dung all over the piece evenly, and then, by turning the top to the bottom, the dung is evenly buried; but, as young gardeners are not always sufficiently dexterous to turn every spadefull exactly top to bottom, it

is better to scrape the dung into the bottom of each trench, from the top of the part you are going to turn, all the way you go back, and this is sure to make the dunning or dressing complete. The quantity of dressing must depend on circumstances, an excess of it involves a loss of the material, but can hardly do mischief; generally speaking, two inches thick of good rotten dung would be a very fair dressing. In some very light grounds, a dressing of two inches of good fat loam would be as good as dung, and, when a fresh field or pasture is broken up, the turf itself affords the finest possible dressing, and the first crop is sure to be abundant, if there be no grubs or other vermin to destroy it. In using the turf for a dressing, you may either cut it off as you dig, and throw it into the bottom, which we think the best way, or merely dig it and turn it to the bottom. In all digging, the earth should be broken and chopped to pieces as you go on, and be laid very level.

DRAWING DRILLS is a very frequent operation in gardening. Beans, peas, and twenty other crops, are sown in drills, and many others might be. It is by no means a bad plan to draw drills for the purpose of planting at the bottom of them, and especially in dry seasons, or on high and dry ground. The method of doing this is, to draw a line very tight from end to end, or from side to side, of the piece of ground on which you are operating. First, cut a piece of stick the length that your rows are to be distant from each other, then stretch the line for your first row even and straight, a proper distance from the edge of the ground, which distance should always be half the distance between row and row. When the line is stretched, take a hoe, which is a well known garden tool used for cutting up weeds and stirring the surface of the earth, and draw with it a gutter the whole length of the line, and exactly even with it; of course, as you draw this, the earth you draw out of the hollow forms a ridge on each side of it. When you have done this from end to end, take your piece of stick that is to regulate your distances, lay it down at one end of the drill, and taking up the line from where it was, fasten it at the exact distance of the length of the stick; then go to the other end of the drill with the stick in your hand, and move that exactly the same distance, taking care to tighten the line, or it will be no guide; then draw your drill as before, and so continue to remove the line and draw drills at equal distances until you have completed the piece of ground. These drills may be made shallow or deep, by using small or large hoes, and there are many who, without any other object, prefer fixing the line, and drawing very small drills, only for the purpose of marking the rows for planting. There are others who draw them as deep as they can to plant lettuces or other small things at the bottom, because it

saves them from the sun a little, and gives them all the benefit of rain or watering. It is also considered a protection in winter. Those who are very particular always draw their drills from south-east to north-west, and in summer, drills for planting out small things to be skreened from the sun, they draw out all the earth on the south-west side, whereas, when they drill for protection in winter, they draw it all out on the north-east side, for it is a great advantage to beans, peas, and any thing rather tender, to be skreened from the north-east winds. All kinds of small trenches or gutters thus formed with a hoe are called drills. When the operation is conducted on a larger scale, and it is done with a spade, it is called ridging, in which the ground is alternately high and low, the surface being a vandyke form all over. The remark as to the directions of the drills equally applies to ridges—they are best when they can be made to range from south-east to north-west. A third operation, which is still larger in its way, is called making trenches, but it is used for little else than celery, which is generally planted a foot below the surface, and earthed up two feet above it. We shall frequently have to direct things to be sown in drills, and these explanations will save further remark.

TRENCHING GROUND.—This may be called double digging, for the operation is much the same, but carried on two spades-full deep, instead of one. The trench which we have described in digging to be one spade wide and one spade deep, should be two wide and two deep, and the soil when dug out is to be wheeled to the other end of the work, in the same way as directed for digging. This done, you dig two spades-full wide, and only one deep, and throw into the bottom of the trench, which puts your top spit undermost; you then dig down the second spit, and throw that as you dig it to the top of the other, by which the bottom spit is raised to the top. This leaves the trench you are taking it from empty, and ready to receive the top spit of the next row at the bottom, and the under spit at the top, till the whole piece is completed, when the soil first wheeled to the other end will fill the last trench, and complete the work.

OCTOBER.

KITCHEN GARDEN.

MAKE a Mushroom bed, or prepare in some way for growing some. Of the many ways there are of accomplishing this, the most prolific and lasting is the ordinary bed, made with short dung, in the form of a ridge roof, or bank. To make this well, you must get some short dung, consisting chiefly of horse droppings only, and turn it over several times, shaking about each time to moderate the heat. Then choose your spot for the bed. If you have a shed of

any kind it is better than the open air: and if you are obliged to do it in the open air choose a wall, if you have it; the difference is, that where you form your bed against the wall, you form only half a ridge, the wall being merely a place to pile up your dung against. If you do it under a shed, or in the open air, to form a ridge, lay the dung four feet to five feet wide at the bottom, and as long as the bed is to be, pile up the dung, making it narrower as you proceed, until you bring it to an edge on the top, patting it close with the dung fork, but not treading it together, or pressing too hard. This may be covered with litter or straw to keep it from rain or wind, and when the heat is moderate, and there is a gentle warmth, remove the covering. Pat the surface all over with the back of a spade to make it level, then break your Mushroom spawn (which may be bought at any respectable nursery) into pieces as large as hens' eggs, tuck them just under the surface, six inches apart, all over the bed, pat it level again with the back of the spade, and cover the surface all over, an inch and a half thick, with good working loam, or soil from the kitchen garden, cover the whole with clean long straw, eight or ten inches thick, to keep it from wind and wet; there it must bide till it bears—of course it must be examined once or twice a week to see, and when it begins to bear, the Mushrooms should be pulled up, not cut off.

Another way of growing Mushrooms, is to appropriate a declining melon or cucumber frame, and plant spawn in lumps as large as an egg, four to six inches apart, all over it, an inch and a half deep, and cover up with the glass, and, if necessary, to keep it from frost with litter, or mats also. This will rarely fail to yield a good crop.

ANOTHER METHOD is to fill, to the length of two-thirds, large sized pots, say No. 8 or 12, with horse droppings in rather a warm state, on this put a lump of spawn, about the size we have before mentioned, on the dung, and cover an inch and a-half with good mould. These may be placed anywhere, from a cellar to a conservatory, and will often yield abundance.

ANOTHER METHOD, simple enough in itself, is resorted to by persons even in London, and in wine or beer cellars: a shelf, nine to twelve inches wide is put up, with an edge standing up three inches. Horse droppings, in a state of slight ferment or very moderate heat, is put on this shelf, and pressed in a sloping direction against the back, so that it is two inches thick in front next the edge, and eight inches thick behind. Upon this place, three or four inches apart, pieces of spawn, as large as walnuts, then an inch of dry loam or kitchen garden earth. Humber, the post-master at Southall, has made people stare when he has taken them into a dark cellar, to see mushrooms growing as fine as in a regularly constructed house.

ONE MORE may be tried with a chance of success, and with no trouble. Instead of throwing away old mushroom beds, dress one particular portion of the ground with them, and not use it indiscriminately, you will, if the soil be at all congenial, have plenty of fine mushrooms.

In short, let but the spawn have good stuff to work in, and there may yet be fifty more methods of growing them; indeed, it is much more difficult to stop them, for where they once take they will overcome all obstacles, but as they are impatient of a wet season, it is always better to try them on ridges, such as cucumbers are grown on, or where they can be protected a little, than to trust to open ground.

CAULIFLOWERS.—Some of the strongest and best may be selected to be planted out towards the end of the month, in patches of five, to be covered with hand glasses throughout the winter; these patches should be exactly the size of the hand glass apart in the row, so that when the glass is lifted off, there will be room to place it in the row. The rows should be six feet apart, and they will admit of crops between them. The object of these hand glasses is not less to protect the plants from wet than from cold. The ground should be well dunged and dug, and the five plants be placed thus:

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so that the glass will cover them conveniently. As between the rows of hand glasses there are six feet in the clear, it will allow of a bed three feet six in width, and two fifteen inch alleys, which will be ready for any other crop. As soon as they are planted, they should be gently watered, and the glasses put on, close down, all round for the first few days. At the end of a week they may be propped up on the warm or south-west side, and there remain, unless the weather be very warm and dry, if so, they may be taken off a few hours in the middle of the day, and each placed in the row on the vacant space left for it, between its own patch and the next to it. Cauliflower plants which are to be kept over the winter as plants may be planted or pricked out were they are to remain, either in beds, to be hooped over and matted in bad weather, or under garden frames, or in patches of as many as can be crowded under a hand glass, two to three inches apart; or, if none of these conveniences be open, to take their chance in the warmest situation you can find, and be protected as well as you can do it with litter.

BEANS.—Those who care about early Beans may sow two or three rows for the chance of their standing the winter, or they may sow a patch in a sheltered corner to be planted out in a row hereafter. If sown in drills, they should be four inches apart in the row, and eighteen

inches from one row to another; cover the seed an inch by drawing earth into the drills. If sown in a patch, they should be an inch apart, and the advantage is, that in the winter months they are easier protected.

PEAS.—Sow a few early Charlton Peas in drills, eighteen inches apart. The Peas in the row should not be too thin, as some may perish, say an inch apart, if the sand be good; and in covering the seed draw the earth from the low side of the drill, that the earth originally drawn out of the drill shall form a skreen for the young plants. South borders have been recommended. It is frequently the case, that Peas under a south wall have been killed by frost, while those in the open ground have stood. The excitement of a mild winter and a south aspect wonderfully help early Peas, if there be no severe spring frost, but, so that the north-east winds are broken off by something, no matter whether high trees, hills, hedges, or fences, we prefer an open space in the garden for Peas that are to stand through winter. Peas may also be sown in a patch to transplant.

LETTUCES may be planted out from the seed bed into a warm situation, six inches apart; and if you have any garden lights at liberty, a frame placed over some of them will still further protect them, and insure sallads through the winter. Brown Dutch, Brighton cos, and hardy cabbage will have been the sorts sown in August for this purpose. When you plant out, lift the strongest plants from the seed bed, and plant them no lower in the ground than they were growing in the original place; the smaller plants being left where they were sown will grow stronger for future planting, or remain in the seed bed altogether till large enough to eat. We have good reason to believe, that as we progress in all things appertaining to the garden, we may have improved sorts of hardy Lettuce. This should always be kept in mind when purchasing seeds, and the nurseryman or seedsman should always be asked if he knows of any better kind for your purpose than that which you are proposing to buy. Some of the smallest plants in the seed bed, where they are too thick, may be taken away to give room, and be planted in patches, to cover with spare hand glasses, in case of bad weather; these should be only three inches apart, and be merely planted to get strength. Whole garden lights full may be planted in the same way, where the supply of sallad through the winter is required to be large. Seed of the hardy cabbage Lettuce may be sown in frames, or where they can be covered if required.

CELERY.—This requires to be earthed up as fast as it grows, therefore, during the whole period of its growth, as soon as any advance is made, a dry day should be chosen for the operation, and the earth being broken very small, should be banked up on both sides of the

Celery. This Celery is always planted in a trench about a spade deep, therefore, at first the earth is drawn into the trench, but it soon grows above the top of the trench, and after it is filled up there is a bank raised against each side of the row of plants, as high as it can be heaped up, without going into the heart of the plant, and the earth which is used is dug from between the rows. The object of this earthing up is to bleach or whiten the stems of the leaves and the heart of the plant, by keeping away the air and light; and the operation is carried on until it is fit to dig up for use.

CABBAGES.—This is a good time to plant out a quantity in rows, about six inches apart, and eighteen inches from row to row, to draw as collards such as are marketed in bunches, or to draw half or two-thirds in that way, and leave the rest to cabbage. In selecting these plants from the seed bed, or from the nursery beds, if they have been pricked out, take the strongest and best, and remove them without breaking the roots; but if any have tap roots they may be shortened. The ground must be dunged and dug. All the smaller plants in the old bed may be planted, or pricked out, three inches apart, into nursery beds, which may be dug, but not dunged, for the purpose, there to remain till January; but the great supply of greens for the winter must now be provided, therefore the quantity planted out to draw as greens, and be left for early cabbaging, should be equal to the wants of the house.

HOEING Broccoli, Savoys, Cabbages, and other crops, and well stirring the ground, drawing some of the earth to the stems of the advancing plants, are very beneficial, and it must be always recollected, that the frost does not penetrate the ground nearly so far when the surface is loose as when it is solid,—besides this, it has a cleanly appearance, gives air to the roots, keeps the ground clear of weeds, and gives an air of neatness,—so that this should never be neglected with any crop. It is also useful in crops of Spinach, Turnips, &c., to remove plants where they are too thick, and give the others room, keeping them clear from weeds; so, also, it is beneficial to beds of herbs, nursery beds of young plants, &c.

RADISH.—Sow the short topped Radish in a warm situation where it can be covered from the frost with straw or other litter, and the sowings may be a fortnight or three weeks apart; but this is never worth while unless you wish to draw Radishes in January, and think them worth the trouble. You may, if you think them very desirable, sow a few in the hot bed, but in all these proposed operations you are not to act unless you value the produce sufficiently to make it worth the trouble.

SALADS.—We have already mentioned Lettuces, which form a very important addition to a Salad at all times; but there are other subjects

which greatly assist to form a Salad in winter. Mustard, Cress, Radish, and Rape, can be always raised in a few days with heat. A few seeds in a pot put on the hot bed are up and ready in a very short time; or they may be sown in the open ground, and be covered with a hand glass, and in case of frost with mats in addition; or these small Salads may be raised in flower pots in the dwelling house, almost without care—the seeds in all cases being only just properly covered, no more thickness than a fair covering to hide all the seeds, and according to the supply required, the sowings must be continued one under another for a regular succession. These, with the help of Cabbage and other Lettuce, corn Salad, Beet Root, Celery, Dandelion, Sorrel, and other herbs, make excellent Salads through the entire winter.

ENDIVE.—The most simple method of blanching Endive for use is, to either lay a flat tile on it, or tie it up like you tie a lettuce, and according to your wants so blanch a number of the most forward plants, some of which should by this time be full grown; you may also plant out some of the strongest plants from the seed bed on a sloping border, or on the southwest side of ridges thrown up on purpose. They will stand through the winter better than on flat borders or beds.

WINTER SPINACH.—Thin out by pulling up all spare plants that were not removed at the last thinning; they ought not to be nearer than eight inches apart, for the growth will be far better; and as the supply of this vegetable is by picking off the largest leaves, and the same plant will bear picking from for weeks, it is important to give them plenty of room to encourage rapid growth.

TOP DRESSING.—This is frequently resorted to where there are crops which cannot be disturbed, but which remain in the ground a long time, such as beds of Mint, Sage, Thyme, Pennyroyal, Marjoram, and other herbs, which are picked green for use, or cut in quantities in the autumn for drying. The roots of these are so near the top, that dressing cannot be dug or forked in without damaging the fibres. The surface may be therefore loosened a little with the hoe, and a top dressing of rotten dung be spread over it, to be washed in by the rains. Some, however, prefer the plants of this kind being in rows wide enough apart to dig between them, and so bury the dressing whenever it is required; and we prefer altogether making new beds every three years, and appropriating the old ones to other purposes, Mint beds, perhaps, excepted, for the difficulty of cleansing a Mint bed is great.

ASPARAGUS.—At the end of the month cut down the haulm, unless you wish to save the berries, and they should require more ripening, in which case it must be delayed till they are ripe, though it is seldom they are not fully ready

in October. Clear off the weeds by hand, or with the hoe. It is a common practice to dig the weeds into the bottom of the alleys, and to spread some of the mould out of the alleys on the top of the bed—a nasty habit at the best—for the constant burying of the weeds fills the ground with their seeds, and provides an abundant crop for the future. It is more labour, but far better, in moderate sized gardens, to clear away the weeds and burn them. Spread a good dressing of rotten dung over the surface, and put a little soil out of the alleys over the dung; bank up the sides even, and leave the whole straight, tidy, and clean. It is a common practice among market gardeners to plant a row of Cabbage plants in the alleys, and in other cases to plant crops along the tops of the beds, all of which is in very bad taste, and should never be resorted to on any consideration, unless ground were exceedingly scarce. The compost put on the top for a dressing washes down a good deal into the alleys, which thus afford excellent stuff for dressing, and which ought never to be made foul with weeds, or be impoverished by any other crop. Dig up plants for forcing; these should be taken from old beds which are to be renewed, or, in the absence of these, a constant succession of three years old plants should be provided. We prefer renewing old beds once every five or six years, and for the sake of a succession we should make one new bed every year. The plants intended to be forced may be placed quite close, side by side, in the hot bed, on three inches of good soil, above the dung, and be covered three inches above the crown with good light soil; and those who love flavour as much as beauty, and perhaps more, will find the shoots all the better for being allowed to grow four inches above the soil before they are cut, and then cut two inches below, which will form a six inch length—quite enough for any private use—and if the taste were not vitiated, much better for market than when the half inch of eatable stuff is attached to a foot of hard white stick. When the plants are adjusted in the hot bed, whether they fill, or only half fill, the frame, they must be covered up with the light, which must be tilted occasionally to let out the steam. If the number of Asparagus to be forced only occupies half the light, or part of the light, the remainder will be useful for any thing else.

HOT BED FOR FORCING.—It is not often worth while to make a hot bed on purpose to force Mint, but a bed may be made to answer several purposes—raising of seeds, forcing Asparagus, forcing bulbous and other flowers. The simplest and best mode of doing this is, to shake out the best warm stable dung you can get, and having marked out the size you want the heap of dung, which must be one foot larger all round than the box and light you are going to use, shake out and spread the dung to the pro-

per size, and pile it of a square heap, knocking it well together with the dung fork to make it compact, although it must not be pressed too close. If as you are building this you can throw on the centre portion a few baskets of leaves that have fallen from trees, every now and then, and spread them as large as the frame, they assist in prolonging the heat of the mass, and greatly enhance the capacity of the bed. Such a bed would be found useful, whether made this month or next, or any other time during the winter; the uses will be found in the operations, which will be directed from time to time, as, if such an adjunct were on the premises. Economy would dictate the making of a hot bed of two or three lights at once, if there were occasion for as much room; but, supposing there were the capacity, and the material, and the use, for three lights, we should prefer making them three separate one-light beds, to one bed of three lights, because their independence of one another would render them available for more purposes, and they would be better adapted for the particular work they are set to do,—besides this, they would be made at three different times, so that there would be at command three different degrees of heat. When a bed is made, the box and light must be put on until the heat rises and moderates again, when three inches of mould may be put all over the inside of the box, and it will be ready to plant things in, or to put garden pots of seeds, cuttings, plants, or flowers in.

CARROTS, PARSNIPS, BEET, &c., may be dug up and stored. The best way to do this is, to pack them close in sand, and next to sand dry mould, in some outhouse or cellar, away from frost. Where they are to be stored in larger quantities they may be pitted like potatoes.

POTATOES must also be taken up and put away in pits, or in a dry cellar or outhouse, where, with a very thick covering of straw, they may be preserved from frost. If there are more than can be conveniently disposed of this way, pit them, that is, dig a hole three or four feet wide and one deep, and long enough to hold your stock intended to be stored, or, what is better, make several smaller, pile up the Potatoes the shape of a bank, on this put three inches thickness of straw and six of mould, the soil you dug out will be ample, and this must be patted smooth and close with the spade. Private families will, perhaps, find it more convenient to make several round holes, and preserve the Potatoes in separate cones, so that they only expose a few at a time as they are wanted, instead of opening one end of a long pit.

FRUIT GARDEN.

Gather in the finest weather during this month all the store Apples and Pears, and, if you value their keeping well, pluck every fruit

singly in your hand, and put them very gently into the basket, which should have a hook to it to hang on one of the rails of your ladder. A slight blow, such as to ordinary people would seem of no consequence, such as the falling of an Apple or Pear from your hand only a few inches into the basket will sooner or later insure decay in that part. When your basket is full it should be emptied with the greatest care. Let the fruit be taken to the fruit room, and laid in heaps, each sort in its place. In a fortnight after gathering, let them all be carefully wiped, and laid on their shelves on straw, singly, and covered with straw. Of course, we speak of choice fruit only, and such as are worth the trouble. The rough kinds, which are grown in abundance, and used in great quantities, are not worth the trouble, but even these should be looked over occasionally, and the forwardest used first. Those who are very choice of Apples and Pears try many ways of keeping them, one of which, in despite of its disagreeable nature, is becoming pretty general. Any dry sand is placed a quarter of an inch thick at the bottom of a box, the fruit is carefully laid all over it, so as not to touch each other, dry sand is then put in to fill all the interstices, and completely cover the layer of fruit half an inch, another layer of fruit is then put in, and sand run in all over and between them, till they were covered as were those under them, and so the packing is continued to the top, which should have a good quarter to half an inch of sand above them, when the box is closed and fastened down. If this packing be well done, the fruit will last as long as by any other method we know of. The same thing done with bran, sawdust, and other mediums, does not prove so successful; but the nasty part of the business is getting rid of the sand which gets into the nose of the fruit, and into the corners of the stalk, and can only be got rid of by very carefully washing and brushing the fruit. Another mode has been found to answer the purpose, which is to put them in pans, and cover over with bladder or oiled cloth which is air-tight. A third is to put them in boxes, with straw only between all the layers, and fasten them down. We confess, we could always keep all the fruit we wanted quite long enough by only placing them in a dry cool room, on shelves, covered with straw, and lying on straw, frequently, however, examining them, and when, as we frequently found, they were damp on their skins, wiping them dry, and always taking first those which indicated they were most forward.

PRUNING is an operation which may be begun this month, but is better done next, and, considering that there is abundance of other work, in getting and storing crops of all kinds, it is useless undertaking too much.

OLD WALL-FRUIT TREES.—In taking an old garden it is not unusual to find a number

of old, ill-managed, half decayed trees, and it is not at all out of the common way to find them barren. Friends who wish to appear wiser than ordinary, and would think a visit to our garden totally lost if they did not advise something, will recommend the extermination of these old stumps, and the substitution of new trees, and unless any nurseryman who may be consulted be more patriotic than any we have met with, they will discover that such a nice wall deserves much better sorts. There is an old piece of advice, which we perhaps first heard in another kind of nursery, "never throw away dirty water till you get clean," and if this ever applied forcibly to any thing it would to fruit trees. The first thing we should do to a concern of the kind, would be to cut away all the old wood that we could remove without losing too much young wood, and thin out the young wood to a moderate quantity, saving the most vigorous shoots. We should then, with the care that is always required when working among roots, remove the earth from the border, three feet deep, all the whole length and breadth, even to six or eight feet from the wall, and below the roots. If, as we should fully expect, we found the soil to be sour and wet, we should make a good drain all along the border at the extremity of the front, large enough and low enough to well drain the border, if it did nothing else. We should prune off some of the extremities of the roots, and remake the border with good loam from a meadow, and if it were the top spit only, with the turf rotted in it, so much the better. The old soil may be laid in a heap any where for other uses. As, however, it is just possible the old trees are past their prime, and may not sufficiently recover to be worth adopting, we should plant young trees between them, so that, besides getting all we could off the old ones, we should be also providing new ones, and only cut away the old ones to make room for the young as they advanced. The making of the border will not have been wasted upon old trees only, but will be good for whatever may be planted there, whether the trees against a wall, or crops in front of it, the value of the border will exceed the cost of it. The next question is, what trees should we plant? Of Peaches, we should procure one early Avant, one Royal George, one Noblesse; of Nectarines, one Elruge, one Fairchilds, early, one White Flanders, one Moor Park Apricot, one Green Gage Plum, one Imperatrice Plum. This would be an excellent assortment for a moderate sized garden, and if there be a south wall that will take them it is a fortunate acquisition. If it will only take part of them, we cannot select a bad one from those we have mentioned, and if they are wanted, or any of them, it will be wise to go to the nursery where you mean to buy them, and mark your trees at once, for the leaf will have hardly dropped,

and there can be no mistake ; and then, when your ground is ready to receive the plants, go and see them carefully taken up, and plant them the same hour. However, we do not desire to hasten all planting this month.

Selecting fruit trees at the nurseries cannot be done too early, and the present month of October is as good as any in the year for that purpose. Do you want a few good Apples, buy those that are most useful. There are some which no garden should be without ; for instance, Ribstone Pippin, Norfolk Beaufin, French Crab, Pile's Russet, Golden Harvey, Franklin's Golden Pippin, Ferns Pippin, Nonpareil Kerry Pippin, Hawthornden, Royal Russet, and Non-such ; and these may every one be grown as an espalier, without apparently taking any room up, and certainly without damaging any crops. There is no better way of growing fruit in a garden of limited space than planting espalier trees ; they present a flat surface on both sides, and nothing suffers from their drip. Crops of all sorts can be grown almost close to them ; they are easy to prune, the fruit easy to gather, and they may be placed almost any where. If there be but one garden, and it is destined to be flower garden, kitchen garden, and orchard, see the convenience of espaliers,—a walk down the middle of a garden is necessary. Make a three feet flower border on each side, planting the espalier trees three feet six inches from the edge of the path every ten feet ; they make an excellent boundary or back to the flower borders, and appear to occupy no more room than a box edging when they are kept in good trim. Let nobody, then, say they have no room for more fruit until they have looked about them for room to plant espaliers. A very small garden would hold the twelve Apples we have mentioned, and they will be found useful and profitable in a family. Where there is ample room espaliers may be planted twelve or fifteen feet apart ; but as these trees should be always grafted on Paradise stocks, and are of dwarfish growth, they may be advantageously restrained within ten or twelve where space is valuable.

If you want pears, get the Jargonelle, the Summer Bergamot, the Charmontell, Pas Calmar, William's Bon Chretien, Gansel's Bergamot, Maria Louise, Swan's Egg, Brown Beurre, Green Sugar, Orange Bergamot, and Cressane. These are a good assortment and will be equal to the wants of an ordinary family. If these are planted as standards, do not place them nearer than fifteen or twenty feet apart, and, whether you are planting espaliers or standards, dig out the soil three feet in depth, removing all that is bad and hungry, and replacing it with good sound loam, or, for want of it, with the soil of the garden, leaving the bad stuff outside. If, however, you cannot find other stuff, mix the bad and the good together, and a good barrow-full of dung with them, anything is better than

planting upon a bad, hungry, undisturbed bottom, for, whether it be sand, gravel, or clay, it is poison, when the roots reach it, whereas, if it be chopped about and mixed with dung, brick-rubbish, loam, or only the top soil, the trees will do better, and longer, than if it be undisturbed. The planting of a tree is a simple operation, and merely requires attention. When the holes have been dug, and the best that can be done has been done with the stuff, return it to the hole, when, after it has settled a few days, you dig out enough to make room for the root, which should have every ragged or bruised end cut clean with a sharp knife, and if any shoot is very long it may be shortened, but if you can procure your plants root pruned, one season back, so much the better. Let the tree be held upright in the hole, while the soil is pressed between and under every part of the root, and the tree is moved backwards and forwards, and shaken, until the soil can be trodden solid and firm, and the root is but just covered, for nothing does more mischief than planting too deep. If the situation of standard trees be exposed, they must be supported with stakes, to prevent the wind blowing them about and disturbing their roots.

The plums which may be required, besides the Greengage and Imperatrice, are the Orleans and Golden Drop for desert and Wine. Sour Egg plum and Damson for the kitchen and preserving—these are all useful. Gooseberry trees, Currant trees, Raspberry canes, Strawberry plants, are all useful in a garden, and a few young and vigorous bushes of the two former should be planted next month, and the ground should be prepared during the present by trenching two feet or two good spades deep first, and well dunging and digging the dressing in afterwards.

FLOWER GARDEN.

This month must be chiefly occupied with preparations for the winter protection of plants and flowers. Tender plants, which have been standing out of doors, must be returned to the greenhouse, the dwelling-house, or to the pit, and if you are at a loss for a pit, build one of turfs cut as if for laying down, only thicker, if you can get them ; with them form a wall of such dimensions, that your light, or sash, or intended glass cover, shall have good resting. When you have built it as high as you intend the front to be, you must begin your next layer of turf on the side, six inches from the front, and lay it round the back, and as far as six inches from the front on the other side. The next layer begin six inches further back, and proceed round the back, till you are parallel with it on the other side, then go still six inches further back, until, by repeated layers, each falling short of the previous one, you make a high back and the sides sloping down to the front ;

then, with bits of turf cut thin at one side, and left the full thickness on the other, you fill up the unevenness at the sides, and with one good layer of turf all round, from the front to the back, you make an even surface. It is a rudely constructed pit, but it is far more warm than a brick one. If you have a regular plate of wood all round, for your glass to slide in, you have only to put it on, and pegs may be driven down, about two of each side and one back and front, to which the wooden plate may be fastened, and if you have not a plate, get four pieces of board and make a frame with them to cover the turf and rest your glass on. Before you have put your plants in their winter quarters examine them, take off the dead leaves, and if they require it, cut them in to take less room or for the sake of the cuttings.

Heaths, Botany Bay plants, camellias, myrtles, and hard wooded plants generally, will do as well in the pit as in the best constructed house. Geraniums are more easily damaged by frost, and are better in the greenhouse, unless you have a geranium house on purpose.

Verbenas, and other tender things that have been in the border, ought to have been potted up last month, but, if not, the sooner they are taken up the better.

Dahlias should be lifted so as not to disturb their roots, and be earthed up well a few days before storing them, but not cut down until they are to be put away, then fasten your labels on with wire, cut off the stems within six inches, and put them where they will be dry but not warm, and where they will be free from frost, but place them with their crowns downwards. They may be packed away in dry mould or sand, or placed on shelves in a dry cool cellar or store house, or they may, for want of other convenience, be pitted like potatoes in the open ground, always observing that the crowns or stems must be downwards, this prevents the moisture of the hollow stem from rotting the crown of the root. If any of the roots happen to be small, and there is danger of their dying, it will be better to pot them at once, and even in some cases to keep them growing.

The soil of Tulip beds should be turned over every week until it is returned to the beds for planting, three or four days before the roots are to be set, which may be any time this month, and, with regard to common sorts and offsets, the sooner it is done the better. One good rule for planting of Tulips is the swelling of the bulb, for a Tulip ought never to be out of the ground when the green spike is exposed. The ordinary out of door beds may be planted by dibbing holes with a blunt dibber, four inches deep, six inches apart, and dropping the bulbs in. Offsets may be planted in drills, drawn three inches deep, placing the bulbs about three inches apart, and where the sorts vary, miss one, and place the label there. The beds

of the soil that be good enough may be trenched before planting, but as rank growth is not desirable in out beds, it is of small importance, and, with regard to breeders, the only difference we should make would be to plant any choice ones eight inches apart instead of six, that there may be less danger of mixing their offsets, or taking the wrong bulb at the taking up. Many persons recommend planting in sand. The only good of putting a heap of sand under and over each bulb is, that in taking them up the sand shows where the bulb was. It is perfectly useless, and, if not very clean, sometimes injurious. The best beds may be left till next month, but before you plant your out beds you should arrange your best, filling up vacancies, and making any necessary changes.

Auriculas are best kept in a common garden frame and glass, such as hot beds are made under. The ground upon which Auriculas ought to stand should be hard, formed of brick-rubbish, gravel stones, or clinkers, or paved with bricks, slates, stones, or otherwise, a little sloping, that all the water may run away as it comes through the pots after watering. Into a garden frame, or frames, placed on this, put all your Auriculas, Carnations, and Piccotees, leaving, off the glasses all day, except when it rains, for they must no longer have too much wet.

It may be generally observed, that Carnations and Auriculas want all the air they can have, and as little moisture as possible all through the winter; that they take great harm, or at least run great risk of injury, whenever they are damp or covered up, and therefore covering is only to be resorted to for the purpose of avoiding a worse evil, excessive wet, frost, and raw cold easterly winds.

Anemones of the common kinds for winter and early spring blooming may be planted in patches, clumps, or beds. So, also, common border Hyacinths, Narcissuses, early Tulips, Fritillarias, Lilies of all hardy kinds.

Hyacinth beds may be prepared by digging out a space, four feet wide, two feet deep, and as long as you require it. If the soil you take out be pretty good, mix leaf mould or rotten cow dung and sand, half and half, with four times their joint quantity of the stuff taken out, and turn it over, and chop it altogether, a number of times during the month. Towards the end, throw the compost back into the hole ready for planting, and procure the bulbs this month—the sooner they are purchased the better the choice.

Hyacinths to be bloomed in pots should be potted in thirty-two sized pots, or proper Hyacinth pots, just covering the bulb, and the pots should be plunged in the ground, and covered with six inches of tan, ashes, saw-dust, or sand, whence they may be taken to force from time to time as wanted, or to grow without

forcing in a cold frame. The object of this is to keep them dark and moist, that the roots may grow before the top. Narcissuses of sorts may be similarly served.

Crocuses and early Tulips may be set growing at once when potted, and therefore need not be potted till wanted to grow.

Bulbs in glasses should be kept in the dark until the roots have reached half way down them.

Chrysanthemums in pots should be removed to the greenhouse or dwelling house where they are to bloom.

Roses, especially standards, may have their longest shoots shortened considerably, to lessen the power of the wind acting upon their overgrown heads; but we do not recommend any thing like finished pruning before they have got over the winter, as they frequently die down an eye or two from the effects of frost; and it is better to have one or two more than are wanted. Tender Roses should be taken up and placed in an outhouse, well covered with earth, as if they were laid in by the heels; it will keep them alive and save them from frost. Dwarf ones may be served the same, or potted and housed, or put in the pit or frame.

In decorating flower borders, you should be careful of height, colours, and seasons, for instance, say you are planting a three feet wide border. Hyacinths, Ranunculuses, Anemones, Crocuses, early Tulips, Polyanthus, Primroses, Hepaticas, Violets, Cyclamens, Gentianella, Auriculas, &c., are all dwarf plants, and should be within six inches of, or indeed nearly close to the edge, in single roots, or patches of three or more, and the colours should be as varied as you can make them. Sweet Williams, Canterbury Bells, Wall Flowers, Dwarf Phloxes, English and Persian Irises, Flags, and such like, should be a foot to a foot and a half from the edge; and Monkhood, the white and yellow Lilies, Crown Imperials, tall Phloxes, scarlet Lichness, branching Larkspur, and other tall subjects, should be still further back, while Hollyhocks, Dahlias, and Sun Flowers, should be at the back.

Biennials of all kinds should be planted where they are to bloom.

Perennials should be parted where they have become too large, or have their roots cut in with the spade to proper dimensions. Nearly all the herbaceous plants and perennials may be parted into small bits if increase is desired, and they can be planted in nursery beds to grow.

This is a good time to make alterations in the garden and shrubbery, to form new beds and clumps, to lay down turf to form grass lawns, make new gravel walks, or improve old ones, make edgings, plant and mend hedges, remove trees and shrubs, and do all kinds of draining, trenching, digging, and dressing.

Pruning shrubs where there are branches

growing too vigorously, shortening ugly shoots, stopping the ends of branches where the subject is wanted to be more bushy, and generally trimming all overgrown things into shape, is necessary at this time.

Forming new clumps of shrubs, or improving old ones, is a very desirable, if not sometimes a necessary operation. In selecting shrubs for a clump, regard should be had to a general appearance of green, therefore they should be so contrived as to conceal the most naked parts of deciduous trees, and unless there be particular reasons for the reverse, the planting should be so managed, that the deciduous trees and shrubs, however important, should not stand sufficiently prominent to break in upon the general freshness of the evergreens. The trunk of a deciduous tree should be hidden, and nothing but its head appear, and the foliage of evergreens should be contrasted as much as possible. Hollies, Firs, Laurel, Laurustinus, Arbutus, China privet, Box, Rhododendron, Portugal Laurel, Magnolia, Arbor vitæ, Alaternus, Andromeda, Bay, Phillyræa, Evergreen Oak, Juniper, Cedar, Cyprus, and others, may be so diversified as to have no two of the same colour or form come next to each other. They should also be planted with due regard, not merely to their present height, but to their capacity for growing. Thus the Laurel should never be forward, nor the Cedar backward, as the Laurel will make three or four feet growth in a season, while the other would be three or four seasons doing it. Deciduous trees for a clump should be chosen for something, either for rich foliage, or handsome or early bloom. The varieties of Thorns are beautiful. Magnolia purpurea, conspicua, &c., Cytissus, double flowering Almonds, Peaches, and Cherries, Standard Roses, and various other cheap and handsome subjects, might be seen towering above the tall, or peeping above the dwarf, evergreens to great advantage in their seasons of bloom, and not be at all detrimental when leafless.

Box Edgings may be made, and it is the best and the most neat and elegant of all edgings. They are easily made; having dug all along the part you are going to edge, and patted the surface down with the back of the spade, draw your line or make your mark, and with your spade cut a trench, bringing out the stuff into the path, and with the back of your spade patting as well as cutting, form a sloping bank with a sharpish edge, the exact form of your intended edging. Now tear and trim your box into small plants, and cut them about six inches long, and all of a size or nearly so. You place them side by side along the little bank you have made, with their tops quite even, and not much above it, drawing the earth up them from out of the path to hold them in their places; when you have done the length, lay on the gravel, till it is even with the top of the bed, for the gravel

and the soil should be level with each other, and the box should form a very neat narrow edge between them. The advantage of sloping the bank, and thus bringing the roots under the gravel is, that in digging the border the box cannot be well disturbed, and the growth of the box, if at all interfered with, is not so luxuriant, which is an advantage.

Put the pots of *Mignonette*, *Stocks*, *Verbenas*, *Nemophylas*, and other flowering plants, into the garden frames, without heat, there to remain the winter.

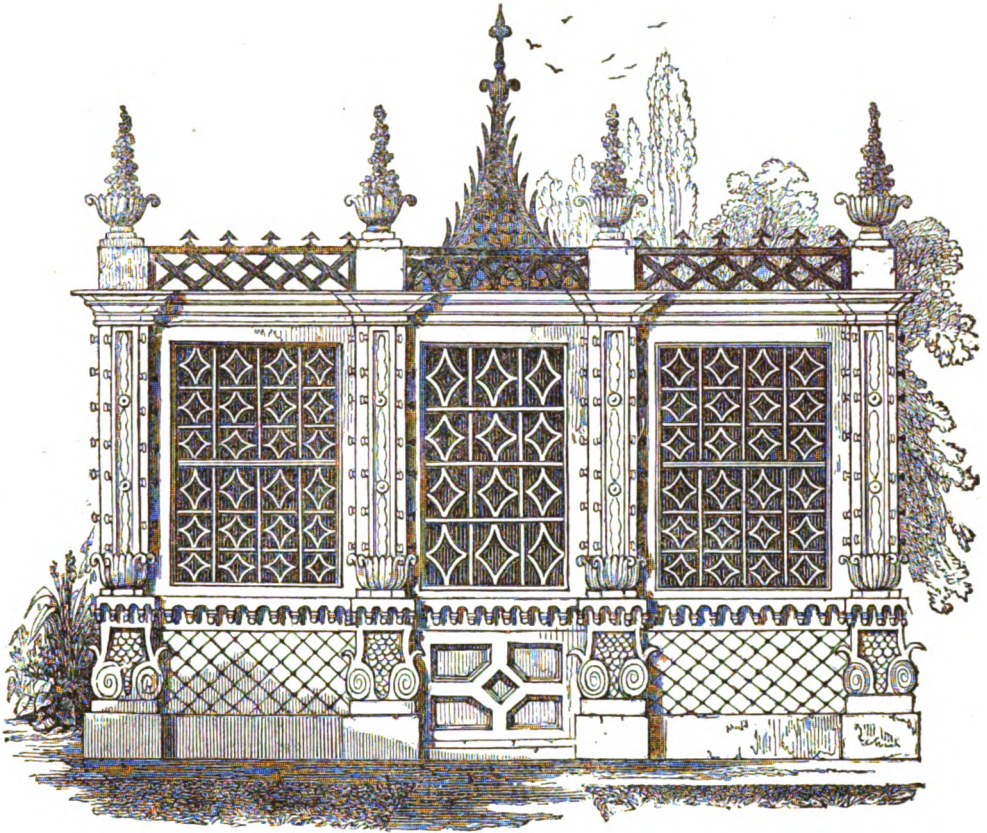
FORCING.—If preparation has been made for forcing a few plants and flowers for the drawing-room, such as *Roses*, *Kalmias*, *Azalias*, *Bulbs*, &c., it is well to begin them in a bed of which the heat has declined. *Roses* will grow right away into leaf and no bloom if they are begun with the forcing-house, or pit too hot. By putting them in with the bed declining, and allowing them to remain a few days, you will be able to increase the heat gradually, say that you begin by forking away all the dung in front of the hot-bed perpendicular with the front of the frame, and pile up against it fresh hot stable dung eighteen inches thick, in another week serve the two ends the same, and the third week do the same by the back, and if necessary renew the front, thus they may begin at 45, and be increased to 65 or 70. Of course, all the while these things are growing there must be air given, and care must be taken that there is no excess of heat, or it would draw up the plants and burn the blooms.

This forcing is purely a matter of fancy, and is only worth the trouble when parties are very fond of having flowers out of season. The proper way is, during the later months of summer to pot such plants as we intend to force, and only move them to the heat when we want them, for they are none the worse, and indeed are something the better, if placed in the greenhouse to bloom without much heat, or left out of doors plunged, to bloom without any. *Hyacinths* and *Tulips*, *Narcissus* and other spring blooming bulbs, are brought forward rapidly on a common dung bed. All you have to do in such cases is to have your frame high enough to hold moderate sized plants, it ought to be at least nine inches in front and eighteen inches behind; for although for cucumbers and melons, six inches in front and twelve behind would make a very good shift, it is well to have a deep frame or two for other purposes. They are handy for taller plants, which require shelter during winter, and are almost as good as a brick pit, because it is easy to pile up mould or litter against the wood to keep out frost.

In making dressed ground, which consists entirely of laying down turf, making gravel walks, and planting shrubs, one broad walk should go round the space, and unless there be a positive reason for it, there should be no

angle or straight line in the whole affair; all stiffness should be avoided. The walk should take a kind of sweep all through, whether uniform or otherwise, but we should say, so that there be no abrupt turns, it matters very little what figure the walk itself forms. To the walk no particular figure should be given; it should be neither square, circular, nor any part of a circle, and the clumps are formed merely to conceal the figure and space of the ground. The entire centre is grass, and must be made by laying down turf, or by sowing grass seed, but turf is by far the best and quickest. You begin by trenching and levelling the ground all over, and heavily rolling it. Then take a bundle of laths or sticks (but the white lath is easiest seen) and mark out your path, which you may take pretty nearly to the outside in some places, and bring it a little further from the boundary in other places, and when you have pleased yourself with the figure of the walk, procure a quantity of turfs, which are cut one foot wide and three feet long, lay these end ways along each side of your path to form an edging to it. In adjusting the turfs, you may find that here and there the sweep of the road or path is not easy, for you can see better with the turf edging down than you can by your sticks, all you have to do, is to move the turf edging inwards or outwards till you have pleased yourself with the winding or form of your path. Your next job is to mark out the places you intend for clumps, and the form of your outer border; these you also lay turf round, and when you have done, you lay turf over all the rest of the place intended for grass, leaving nothing uncovered but the walks and the proposed clumps; then dig out the path on the place marked for it, one foot deep at the edge, and gradually deeper in the middle. This should be filled up with stones, brick, rubbish, clinkers, or any other dry waste, up to three or six inches from the top, and that ought to be gravel, laying higher in the middle than on the side, and rather rounding, you may then plant the clumps according to fancy, diversifying the foliage of the evergreens, and placing the deciduous plants so that all their ugly portions may be concealed.

Let your dwarf slow growing Evergreens be in the front only, as far back as you mean your flower border to be wide. *Rhododendrons*, *Azalias*, dwarf variegated *Hollies*, *Andromedas*, *Magnolia purpurea*, *Laurustinus*, and such like, not more than one to two feet high, make an excellent front row, and may be planted within two feet of each other, or even nearer, to produce immediate effect. Behind these, at the back of the vacancies, plant shrubs of three feet; behind them again six feet; and standard *Thorns*, *Almonds*, and other deciduous trees and shrubs, may be interspersed, with their heads above the foliage of the Evergreens.



CHINESE BUILDINGS.

THE fanciful patterns of the Chinese in their horticultural buildings have already given a tone to our erections, and architects feel as much inclined to imitate them as to adopt any design of their own. Horticultural architects are usually set to work after a dwelling-house is built, and their invention is fettered by the necessity of conforming to something which mars their efforts. The present design was in China

mude with a glass roof—here it is intended for an orangerie and camellia house. As a building standing alone in some picturesque part of the ground, and distant from the dwelling it is pretty enough, but it would suit very few mansions if it were built near enough to form part of the house group of erections. It would form a pretty frontage to a conservatory wherever it would match the surrounding objects.

HOVEA CELSII.

ONE of the most beautiful of our greenhouse plants is one of the most perverse at the same time. It has a strong disposition to grow tall, and branches only near the ends of the shoots. If a plant were permitted to grow without checking, it would probably reach six or eight feet in height, with a very moderate sized or small head, and a naked stem, four-fifths of the entire length. The Nurserymen, in almost all plants, are anxious for growth, and therefore let them

have their own way. Amateurs and their gardeners like generally all they can get for their money, and therefore buy the largest, so that the foundation of an ugly plant is laid before the specimen reaches the hands of the person who is to grow it up. We recommend then, in the first instance, that any one who wishes to grow a handsome specimen of *Hovea Celsii* should buy the smallest plant he can find—a healthy cutting just struck would please us

better than a two-year old plant; if this were but two inches high, it would do for our purpose, and having pinched the top out, place it in a sixty sized pot, with compost of one-third peat (by which term we mean to describe that kind of fibrey turf which is known as Peat, and is obtained from Wimbledon Common, Woking, Bagshot, and other similar commons, and is generally, used by all heath growers, and the cultivators of American plants,) one-third good rich loam, and one-third leaf mould. This, when mixed, will be found generally to let water drain through it well. If, however, the loam happens to be inclined to stiffness, a little sand may be added. In this continue it till the roots reach the side of the pot all round, keeping it moist, but not too wet; and if it be Summer time, or mild weather, giving it as much air as possible. The object of growing it in soil, without stable or animal dung of any kind, is to check a little that exuberance of growth which is the only drawback to a plant which must be housed in winter, and which could only be otherwise beautiful if allowed to grow in an open bed in the conservatory with almost unlimited space. From this sixty-sized pot, when it appears full of root, remove it to a forty-eight sized pot, with the same kind of compost to fill it up; when the pinching off the top has made it throw out side shoots, you must judge whether there are enough of them, and whether they are well situated. If they are four or five in number, and pretty well round the plant, they may grow three inches without being stopped: but if only two or three, pinch out the points of them, when they are only an inch long, and if one be more vigorous than the rest, stop that one alone, before you stop the others. This will induce other shoots to come out from the side and render the plant bushy. By taking great pains and acting upon this system with great watchfulness, taking care that the plant is never in actual want of water, and never too wet; and, moreover, allowing each pot to be pretty full of roots before the size is changed to a larger, the plant will be restrained in its disposition to rapid growth, while stopping the too vigorous shoots separately, whenever any appear to be taking the lead, will keep the specimen from growing ugly or ill-formed, and stopping all of them when they appear long enough for the size of the plant, it will become bushy. Care must now taken to cut out such of the numerous lateral shoots as are in each others' way or grow inwards. As the lower shoots which branch outwards have always a great disposition to grow upwards, a bit of bass may be thrown over it, and the two ends be attached to a small weight or hooks or nails in the shelf or stand on which the pot is standing to slightly bend them down that the branches may be as low as the edge of the pot, and now the shoots may be allowed to perfect themselves except when they ramble beyond the

general growth of the others. By this management a plant may be grown very bushy and very healthy through many changes of its pots, until it has grown large enough to fill a tub, but too much water or too little will make a plant throw down its leaves and show bare stems almost to the tops, and nothing can look worse. If, however, we are inclined to grow a standard plant, the management is very different; let the one shoot go up, and it will keep losing its branches below without any pains taken on your part, and instead of waiting until the pots are full of root, change from one to another as soon as the roots reach the side, for the more vigorous the growth the better. If any of the lower shoots are at all inclined to grow vigorous, cut them away close to the stem, and as the plants advance in height you may remove all the shoots that are below for half the entire height. If any shoot show the least disposition to divide the strength with the leader, take it out wherever it be; and when the plant is as high as you intend the stem to be, take the decline of the bloom for the season of operations to form the head. Pinch out the eye of the leading shoot to stop that, and if it be rather long cut it back a little, then trim the side shoots close in to the trunk or main stem, up to the three, four, or five shoots that are just under the leader, or rather that are nearest to the top of the leader. If these are long, cut them to within three or four inches of the stem, and cut the leader in to just double their length, these will throw out lateral shoots, and all that grow outwards may be allowed to push, whilst all that grow inwards should be carefully taken off. These branches, if they grow pretty evenly all round, may go unchecked; those which push out at the top when the leader was cut back must be watched and stopped as young bushy plants are whenever any grow too vigorous or out of place. When the lower side branches have made their season's growth, you must be a judge whether the head is as large as you wish it, or you prefer it larger, and you must after that prune or encourage the branches you wish to alter. If there be not branches enough when they first shoot, stop all of them, or part of them only where more are wanted as soon as they are three or four inches long, because that will induce other branches, to the number of three or four, to shoot immediately under where you stop the shoot, and thus fill up the apparent vacancy. By this treatment a plant naturally of bad habit may be coerced into comparatively handsome form, and amply reward the skill and industry of the gardener.

It is not our province here to go into the merits of any personal disputes, where we can do justice to a subject without it; but it is hardly forgotten by many gardeners, that this very plant was the subject of some bitter complaints on the part of Mr. Glenney, when, as he alledged, he won a gold medal for six plants, and was kept

out of it by one who showed unfairly. The judges awarded the gold medal to a person whose plants were, with one exception, grown inferior to Mr. Glenny's, and that exception deserved, in the opinion of the judges, all the honour that could be paid it. It was a specimen of *Hovea Celsii*, beautiful as ever was seen; but its merits lay in its being dwarf and bushy. Mr. Glenny complained to the council that this plant was not what it seemed to be, a dwarf plant, but that it was a tall one, whose stem was coiled round under the surface of the mould and its head kept above it. Of course it made a great stir in the society, but the judges and council refused to interfere, and the gold medal was awarded to the contriver instead of the cultivator. Mr. Paxton thinks there is so much merit in the contrivance, that he actually instructs people how to do it, and seems to approve of the trick as played off at the Horticultural Society. In a paper on the subject of the plant he says:—

"Perhaps, of all the plants which are grown in our greenhouses, there is none more beautiful, or more an object of interest while it is in flower, than this fine old evergreen shrub. It blooms so profusely, its blossoms are so gay, and of such a brilliant blue, that although they come at a season when all kinds of flowers are abundant, both in the houses and the open borders, every person who sees them is charmed with their richness, and invariably pauses to contemplate them. This is, moreover, much more markedly the case with that variety which has such far larger leaves and flowers, and which we first observed, in any quantity, at the nursery of Mr. Fairbairn, Clapham; though we have subsequently noticed it in most of the London establishments.

"Such, then, being the extreme attractiveness of the plant, it might be presumed that all cultivators would be emulous to bring it to perfection; and possibly this may be the fact. But so peculiar is its habitude, that after it gets above two feet in height (which it will speedily do if in health), the stem and lower branches take that bare and leafless appearance, which is now justly deemed a defect in any ornamental plant.

"To avoid this peculiarity, pruning should be resorted to, and this is unquestionably the best way of treating small plants, in order to keep them bushy. Still, where large specimens exist, or straggling ones of any size, and their unsightliness, in the particulars before mentioned, would exclude them from a first-rate collection of dwarf and well-managed species, it will be desirable to retain them, and, if possible, to bring them into a more pleasing condition.

"About three years ago, we were much interested in an experiment with a large plant of *H. Celsii*, at a private place in the neighbourhood of London. As the plant was tall, and devoid of all ornament on its lower portions, it

was considered advisable to endeavour to reduce so large a specimen to more limited dimensions and better proportions. In accomplishing this, the stem was released from the stake which supported it, and three or four strong stakes were placed in the soil round the plant, as near as practicable to the edge of the pot. The stem of the plant was then brought down to a horizontal position and very carefully twisted or coiled round at the base, fastening it securely to all the stakes, where it approached them. The operation had to be performed very slowly and cautiously, for fear of breaking the stem.

"This process was effected in the spring of one season; and at the growing period of the following year, several shoots were protruded from the lower part of the stem; and these, with others that followed them, ultimately formed a low and handsome bush.

"More recently, at the great Exhibition in the Horticultural Society's Gardens last month, we noticed a plant which appeared to be a variety of *H. Celsii*, similarly managed, from Mr. Hunt, gardener to Miss Truill, of Hayes Place. This, however, had, to all appearance, not been long treated thus; for no results in the production of lateral branches were manifest.

"Now, the circumstances here described comprise a principle in the culture of this plant, and of free growing shrubs generally, which it is of the utmost consequence to make known and inculcate. It is, that though, while advancing naturally in an erect position, the energies of the plant will be directed to the terminal extension of its shoots, and it will produce few laterals, and these only at the end of each year's growth; any specimen may, by having its stem or lower branches bent, curved, or twisted spirally, have the current of its sap so retarded and interrupted, that it will, in order to obtain a freer course for its supplies, form fresh shoots on the sides of those branches and stems.

"It is the application of this rule which has operated in the case above cited; the means used being of a rather extreme kind, on account of the strong tendencies of the species.

"There are several modes, however, in which the practice may be carried out, so as to be beneficial to all plants, without leaving the process employed so very apparent; and these we shall just glance at here. To divert or check the fluid resources of the plant, and so control them that they shall have an expanding as well as a rising force, is the great object to be aimed at; and where stopping the shoots cannot be sufficiently resorted to, it will depend on the extent to which the plant is inclined to branch, as to what amount of artificial assistance shall be given.

"If the species, like that under notice, be so stubbornly disposed to grow erectly, that a powerful check is required to be put on its progress, so as to make it branch properly; the plan we have detailed may be fully adopted, and

the stem be twisted spirally. If, again, the inclination to become bare at the bottom is not so great, but still needs modification, the stem may be bent and fastened on one side for a time, till it begins to throw out laterally, when it may be reversed, and filled in the opposite direction, till the same result ensues on the other side. But supposing the specimen to be only a little given to acquire a straggling character, all the purposes of the culturist, in regard to bushiness, may be answered by slightly bending down the branches, and tying them in that position to a ring of wire round the edge of the pot, or to pegs inserted in the soil.

"The process last mentioned will apply to by far the greater portion of those plants which demand such attention; and it is largely made use of by every good cultivator. We must explain, however, that it will be needless, or nearly so, in the instance of all species which can have their shoots duly pruned or stopped.

"In effecting any plan of this sort, it is to be remembered, that, while it recommends itself in reference to plants which have been permitted to straggle, as a mode of correcting their rambling character, it will be much more advantageous and certain when employed upon young specimens; inasmuch as the avoidance of an evil, by judicious treatment, is preferable to its removal by any after measures. At such time, therefore, as the shoots are pliable, and the tendencies of the plant capable of being rightly directed, the operations in question should be commenced, and can be continued as they may prove requisite.

"As an additional hint, to aid in the fuller effectuation of this plan, in respect to reclaiming deformed specimens, we would observe, that a trifling incision in the stem of the plant, at one or two of the points where its bark is most distended, will most probably facilitate the protrusion of young branches. These incisions ought not, however, to be deeper than the bark; and they should be longitudinal, or there would be a danger of the stem being broken."

We have no objection whatever to contrivance for the improvement of plants while at home in their respective conservatories, but we cannot help objecting to the award of a prize for any trick by which real skilful growth can be initiated, and therefore, however violent Mr. Glenny's remonstrances may have been, much allowance should be made for one who was defeated by a trick and all reparation refused when the trick was exposed.

TESTIMONIAL TO MR. LOUDON.

It has been communicated to us that Mr. Loudon has been some time seriously ill at Southampton, and it reminds us that much as he has laboured for the gardening community, the gardening community has done but little for him, and though we do not approve of all he

has written, we think he has done enough to entitle him to the gratitude of every one who takes an interest in Horticulture. We believe that a proposal for a subscription to purchase some mark of respect for Mr. Loudon's long and useful services will be received with pleasure, and we believe if extent of circulation give a precedence, we may take upon ourselves the honour of proposing it. We appeal then, to gardeners in their own neighbourhood, nurserymen in their own connections, and private gentlemen in all places, and respectfully suggest that they should at once open subscriptions for the purpose of getting up a public testimonial as a mark of respect for his public and private character, his services as a writer, and his conduct as a man. We the more readily take up the subject, because, though as rivals we differ on some points we are anxious to acknowledge that his labours have been immense, and that some of his works are appropriate monuments; but, knowing as we do, that a man may starve upon fame, and that some of these works have been completed at a ruinous expense and great anxiety, and have not been patronized by the wealthy as they deserve to be, we feel anxious that something worthy of the Horticultural world should be done while he is with us, that we may not have to reproach ourselves with neglect when it is too late to repair our errors. We unhesitatingly say, that Mr. Loudon's works immortalize him, that with all the faults that can be found in the entire number, they are unequalled for usefulness in all the rest of the gardening works put together, and that it would be a shame and a reproach to delay the carrying out of some appropriate measure to show the author of a whole library, that his works were always appreciated, and that it wanted but the suggestion to rouse the Horticultural world to a sense of their obligations. What the best step may be must depend upon Mr. Loudon and his immediate friends. How a subscription should be appropriated is a question which depends upon circumstances, which it would be rude for us to inquire into, but there is no fear of its being judiciously applied if it be made large enough. All we have yet to do is, to solicit subscriptions, to promote public meetings, to look upon small sums as the representation of as kindly feelings and as profound a respect as large ones; to avoid exclusiveness, to forget everything but the object in view, while it is in view, and to remember that delays are dangerous. Let it not be apprehended that we desire to thrust ourselves or the proprietors forward, though any one may be proud of the undertaking; we only desire to move it that others may take the management: most happy shall we be to have to hand over a sum of money to the Committee the moment one is appointed, and we trust our readers will be prompt with their subscriptions.

CARNATION CHALLENGE.

MESSRS. BATES, of Oxford; Dickson, of Brixton; and Keynes, of Salisbury, all good Carnation growers, have challenged each other to show twelve blooms at the Carnation show of the Surrey Horticultural and Floral Society, at present held at the Swan at Stockwell. The terms are curious and interesting. Each was to write down the names of thirty Carnations (six of each class), from which he was bound to show, and, of course, some interest was excited by the speculation as to which thirty each man would select. We notice the subject, because we have been favoured with the lists given in, and of course there are differences, but we do think, that where they happen all three to agree in a flower, such flower must be indispensable to a shower. It is understood that the twelve flowers are to be six bizarres and six flakes, but the showers are at liberty to put what coloured bizarres and flakes they think proper into their stands. Messrs. Neville and Glenny are to be the judges, and they are to judge according to the properties laid down by the Metropolitan Society, and republished in this work. The following are the lists:—

Mr. Dickson.

SCARLET BIZARRES.

Calcut's Brutus.
Twitchett's Don John.
Martin's Splendid.
Rainsford's Game Boy.
Headley's Achilles.
Eliot's Duke of Sutherland.

CRIMSON, AND PINK AND PURPLE BIZARRES.

Ely's Lord Milton.
Mansley's Robert Burns.
Puxley's Prince Albert.
Ely's Duke of Bedford.
Ely's Mrs. Brand.
Sealey's Princess Royal.

PURPLE FLAKE.

Ely's Mango.
Mansley's Beauty of Woodhouse.
Martin's President.
Milwood's Premier.
Nix's Lady Chetwynd.
Wilmer's Solander.

SCARLET FLAKES.

Brown's Bishop of Gloucester.
Bucknell's Ulysses.
Chadwick's Brilliant.
Mitchell's Patriot.
Wilson's William the Fourth.
Wilmer's Hero of Middlesex.

ROSE FLAKES.

Brook's Flora's Garland.
Ely's Lady Ely.
Fletcher's Duchess of Devonshire.
Iron's Queen Victoria.
Lowe's Marchioness of Westminster.
Wood's Rosabelle.

Mr. Keynes.

SCARLET BIZARRES.

Calcut's Brutus.
Twitchett's Don John.
Martin's Splendid.
Wilmer's Conquering Hero.
Smith's Duke of Wellington.
Rainsford's Game Boy.

CRIMSON, AND PINK AND PURPLE BIZARRES.

Ely's Lord Milton.
Mansley's Robert Burns.
Puxley's Prince Albert.
Ely's Duke of Bedford.
Hughes's Napoleon.
Sealey's Princess Royal.

PURPLE FLAKE.

Brabbin's Squire Meynell.
Mansley's Beauty of Woodhouse.
Martin's President.
Mansley's Bonny Bess.
Pollard's First-rate.
Wilmer's Solander.

SCARLET FLAKES.

Brown's Bishop of Gloucester.
Adenbrook's Lydia.
Chadwick's Brilliant.
Greasley's Marianne.
Simpson's Marquess of Granby.
Wilson's William the Fourth.

ROSE FLAKES.

Brooks's Flora's Garland.
Ely's Lady Ely.
Greasley's Village Maid.
Iron's Queen Victoria.
Lowe's Marchioness of Westminster.
Wilson's Harriet.

Mr. Bates.

SCARLET BIZARRES.

Calcot's Brutus.
Twitchett's Don John.
Martin's Splendid.
Bunn's Prince Albert.
Eliot's Duke of Sutherland.
Brown's Prince George.

CRIMSON, AND PINK AND PURPLE BIZARRIES.

Ely's Lord Milton.
 Mansley's Robert Burns.
 Puxley's Prince Albert.
 Cartwright's Rainbow.
 Count Paulino.
 Paul Pry.

PURPLE FLAKE.

Ely's Mango.
 Mansley's Beauty of Woodhouse.
 Martin's President.
 Turner's Princess Charlotte.
 Hudson's Miss Thornton.
 Nix's Lady Chetwynd.

SCARLET FLAKES.

Brown's Bishop of Gloucester.
 Adenbrook's Lydia.
 Jones's Brilliant.
 Greasley's Marianne.
 Simpson's Marquis of Granby.
 Ely's North Midland.

ROSE FLAKES.

Brooks's Flora's Garland.
 Lady Gardiner.
 Tomlin's Brisses.
 Elliott's Duchess of Sutherland.
 Lowe's Marchioness of Westminster.
 Ely's Lovely Anne.

The locality of the three counties may have had something to do with the choice of some of the flowers, but we have heard that Wiltshire, Surrey, and Oxford, will be well represented by the growers, and great interest is excited.

FRUIT AND VEGETABLES.

The difference between producing these two subjects in perfection is rarely thought of, and those who fancy size to be a necessary property fall into a curious error with fruit. Invariably, it happens that rapid growth produces mildness of flavour, and on the contrary, slow growth produces strong flavour. A large and rapidly grown Pear is by no means so strong in flavour as one less excited; hence, the Jersey Pears, which run so large, never approach our own in quality. On the other hand, fine, large, and rapidly grown vegetables, are better than those of slower progress, for the very reason that a Pear is worse according to the mildness of its flavour. A fruit cannot be too fruity; the stronger the taste of fruit the better it is—the stronger the taste of a vegetable the worse it is. Nobody likes a strong cabbage, and therefore slowness of growth, which gives it that strength, should be avoided. In Strawberries, if the season is very wet, and the growth rapid, people universally complain that the Strawberry has no flavour; and as a Strawberry flavour, like a Peach, Nectarine, or any other fruit's flavour, cannot be too strong, rapid growth is objectionable. In

short, the very thing which makes a vegetable good makes fruit good for nothing. Why are forced fruits said to have a poor flavour? Simply because they are excited very much, and grow very fast. Why are the Spanish Onions milder than those grown in England from the same seed? Because the climate causes a more rapid growth. Why are our own large Onions milder than those which are smaller, which are generally very strong? The same cause prevails. Whoever can grow Onions largest and quickest will assuredly grow them mildest. And as it will be always found that quick and large growth reduce flavour, it follows that all subjects which are better for being mild should be grown as fast and as large as possible; and on the contrary, that where it is desirable to have high flavour, the growth must be slow. A very hot summer brings Strawberries of the highest flavour, but moderate size; a very wet summer brings them larger, but weaker. The men who produce the smallest Melons from good seed produce the finest flavoured fruit. The man who produces the largest Cabbage or Lettuce brings the mildest and (as vegetables are prized in proportion to their mildness) best. Thus, then, when we have any thing to grow, we have first to consider whether we want strength of flavour or mildness of flavour, or a happy medium, and excite or retard, or regulate the growth accordingly.

REMARKS ON*The Gardener and Practical Florist,***VOL. I.**

BY THE EDITOR OF THE GENTLEMAN'S MAGAZINE.

THE authors of this work have set out on the principle of independence of thought, and unembarrassed freedom of language. Mr. Glenny is the writer of the parts relating to the properties of flowers and plants, and other persons of talent have been also engaged. There is a great deal of miscellaneous information in this volume, and with a moderate price we think it will succeed. There are some very good articles in it, as on the history of the potato, and that of Mr. Wood on the grasses; and there are some misprints which should be corrected. Among other subjects we should like to see treated, would be an account of the temperature of the different counties in England, as regards cold, moisture, and local influences, from hills, the sea, or soil, &c.; and those plants that are best adapted to them. For instance, we should like to see the following questions answered:

1. How far north will the fig-tree grow as a standard, given north of Sussex? and how far does eastern or western longitude affect the temperature in England?

2. Will the orange and lemon trees grow

against open walls in the south of Hants, as in Devonshire?

3. Will the pomegranate blossom as a standard in England? and how far north will the cultivation of the myrtle in the open air extend?

4. What is the difference in temperature between an eastern and western county, say Suffolk and Herefordshire, in the same latitude, and how are plants affected by each locality?

5. What is the reason the apricot tree produces no fruit, and even perfects no blossom, in Devonshire, as at Luscomb?

6. What is the temperature of Dorsetshire? is it favourable for horticultural pursuits? We have heard not for roses; if so; why?

7. Is there much difference between the temperature of the coast of south Wales and that of Devonshire?

8. Does not every advance *west*, as well as *south*, in England, diminish the cold in winter?

9. Does the greater quantity of *solar light* and heat in the southern counties, in summer, ripen the wood of timber trees and shrubs more than in the western counties in the same latitude, or even further south?

The subjects treated of in these and similar questions are those which appear to us of great practical interest; for they will enable (when the truth of them is ascertained) every planter of ornamental trees and shrubs to know what is suitable to his locality; a point the nurserymen do not trouble themselves about when they have the opportunity of sale. To take one instance. Three persons from three different counties go to a London nurseryman, and each purchases an evergreen magnolia; the person from *Devonshire* can grow his plant as a standard, and is certain of success, without taking any particular trouble, or giving it the least protection. The person from *Norfolk* must grow his against a *south wall*, and give it the protection of a mat during winter. The person from *Staffordshire* will get his plant to grow with difficulty, and seldom, if ever has a blossom on it (see Lord Bagot's garden at Blythfield.) Yet the London nurseryman will make no inquiries as to the place designed for his plants; but, if asked concerning their habits, &c., will answer according to his experience of the London climate and its vicinity. In *Suffolk* the American plants, rhododendrons, &c., never attain the vigorous growth and luxuriant habits and size they do in the southern counties: it is not owing to the exceeding *dryness* of the air, so unfavourable to that class of plants? while at Muswell-hill, near Highgate, they grow most vigorously, and to a large size, in the stiffest and strongest clay.

The mulberry ripens its fruit perfectly in Suffolk, but it will not in the north of Herefordshire, which is nearly in the same latitude. Does not this show greater heat in the eastern side of the kingdom than in the west? That

beautiful tree, the evergreen cypress, seems not able to stand the cold north of Warwickshire. We recollect none at Chatsworth, where they would be so ornamental and suitable; nor are there any at the Earl of Harrington's, at Elvaston. It seems, that north of Berkshire, or thereabouts, in England, the climate becomes less genial for tender plants; the springs later, the summers shorter, and their heat less, and the winters more severe. But, going still further north, when we get to Edinburgh, we then again find a climate much superior to what we should have presumed its latitude would allow. We think, therefore, considering the curiosity of the subject, and the great importance to gardeners and planters, that a very interesting subject for a book would be, "The Temperature of England considered with reference to the different counties, and to the degree of longitude and latitude, to elevation, proximity to the sea, to hills, &c.; with an account of the plants and fruits suitable to each county, and its various localities."

[It will be observed, that the foregoing criticism suggests several very interesting subjects of inquiry, which, to be answered with any practical result, requires us to collect all the information that can be gathered from the localities named, as well as that which may be obtained from the personal experience of those who have made such subjects their study, and therefore we particularly invite attention to the various queries, and earnestly solicit communications from all who can furnish information bearing upon the subject.—ED.]

NOTES ON GRUBS AND THEIR EFFECTS.

Surface-grubs, in 1818, 1826, 1827, and 1836, were very numerous and destructive to turnip-crops; so much so, that prizes were offered for the history of these caterpillars, and the remedies for their destruction.

The Cabbage-moth flies by night in May, June, and July: the female lays her eggs upon the leaves of cabbages, turnips, &c.

The caterpillars are *universal feeders*, living upon an astonishing variety of plants, during July, August, September, and October: the garden suffers most from their attacks, and cabbages have their hearts quite riddled and defiled by them.

They sometimes *live through mild winters*, concealed either amongst rubbish on the surface or buried in the *earth*, where they change to *chrysalides*.

The most effectual *remedy* is to search for them *at night*, when they come out to feed, and to look carefully *beneath the leaves by day*.

The great yellow-underwing moth is abundant in hay-fields, hedges, and gardens, in June and July: it is the parent of a large *surface-grub*, which feeds upon the *roots and leaves of*

turnips in the autumn: it lives through the winter, sometimes under the turf in meadows, &c., and can resist frost. In April it changes to a large brown *chrysalis*, in the soil, enclosed in an earthen case.

In a bed of *onions*, which this caterpillar had destroyed, 47 were found in an area of less than 25 feet.

The *heart and dart moth* is found plentifully in June, in fields, gardens, &c.: it is the parent of a most pernicious surface-grub, which destroys immense quantities of turnips, at every stage, either by separating the crown from the root, or by eating into the more mature bulb.

The *surface-caterpillar* attacked the *sweetdes* in August: it was abundant in November, and no doubt lived through the winter.

The common *dart-moth* flies in multitudes in June and July, and is supposed to lay its eggs in the earth, which produce surface-caterpillars more destructive, if possible, than any of the others.

The *eggs* hatch in autumn, and the surface-grubs live through the winter: they are either feeding a long period, or there are two broods annually.

Mangold-wurzel had the young roots eaten through by them in June: they also attacked the potato-shoots.

Abundant in August, 1841, at the *roots of sweetdes*, in Surrey; and in multitudes at Farnham in September, 1839. During the same months they abounded in Suffolk, in 1835, and were equally numerous there in November, 1841.

The western countries of Europe have been threatened with *famine* from their destroying the *corn*, by devouring the roots, especially of that sown in autumn.

The gardener suffers from their attacks, for they will feed upon the *roots* of various *vegetables* and *flowers*.

As they are forced to feed upon the *roots of grass and weeds*, in the summer, in fields lying fallow or recently sown, it is most essential to keep the land clean whilst at rest.

They pass the *winter* underground, in earthen cells, and come forth to feed again in the early *spring*.

In May or June they enter the earth to change to *chrysalides*, in which they remain about a month.

Mr. Le Keux found these surface-grubs concealed, by day, in *burrows* 2 or 3 inches deep, into which they draw *detached leaves*.

Salt and water poured over a turnip-plant, at the rate of a $\frac{1}{4}$ oz. of salt to 1 quart of water, drove the surface-grub away, but it proceeded to another 6 yards off: they can travel well and expeditiously, especially at night, when the ground is damp. During 10 days other plants were washed with that solution, and were thus preserved; but, when discontinued, they shared the fate of the others.

Children might readily *pick* them from the roots with a sharpened flattish stick, or an oyster-knife.

Serious attacks of these surface-caterpillars are often to be attributed to the *destruction* of the *roots*.

Another, and larger, *Surface-caterpillar* feeds upon *turnip-roots*, and eats off the *crowns*: these larvæ also injure the roots of *cabbages*, and will devour the *leaves*. They bury themselves very deep; and are 2 inches long in the autumn: they were in the *chrysalis* state in March.

The *surface-grubs* are at work almost all the year: in the *summer* they destroy the young plants by eating off the roots near the crown; in the *autumn* and mild *winters* they eat large cavities in the bulb, which get filled with dirt, and are not good for stock; the *weight* is also *reduced*, and they more readily *decay* from wet and frost.

Harrowing, ploughing, and working the soil afford the only chance of destroying the *eggs*, and probably the *chrysalides*.

Insects thrive best on *neglected* and slovenly cultivated lands.

Night-time is the best for applying *liquids* and *powders* to destroy the surface-caterpillars.

Tobacco-water will kill them, if it come in contact with their *skins*.

Hand picking by night is universally recommended on the Continent.

Dry soot, spread an inch thick, and dug in, is said never to fail. *Cabbage-plants* may be preserved by laying some round the stems.

Lime, also, employed in the same way, is a protection; and if *quick-lime* were dusted over the turnips, after rain in the evening, it would destroy the surface-grubs.

Poultry and *ducks* would be serviceable, if turned into the field when *ploughing*.

In *gardens*, planting *cabbages*, &c., round a seed-bed is a good *decoy*; the roots may be daily searched, and the larvæ destroyed.

When a *plant dies*, dig it up immediately, and the larvæ will be found.

Soap and water poured round the plants will compel the surface-grubs to come out of their burrows, when they must be directly picked up.

Pigs, perhaps, may be employed late in the year, where the surface-grubs are swarming, and ten or twelve round one bulb.

No *outward applications* will affect the *chrysalides*, which lie entombed in the earth.

Fires at night, to attract the moths, of little service, as the *females* are not caught by such means.

As regards *corn-crops*, *late sowing* would prove the best; and June and July the most improper for *turnips*, where the surface-caterpillars are numerous.

Spring-corn most likely to suffer from their attacks.

Soils made strong and warm by horse-dung manure most infested, from the *eggs* hatching more rapidly.

Steeping the seeds in bitter extracts mixed with salt or nitrates useless; but *ammonia* would annoy the surface-grubs, if applied in sufficient quantity to the soil; and liquid manure would therefore be beneficial.

Slaked lime mixed with seed-wheat, and then heated and sown together, has been recommended.

Scattering ashes before and after sowing might secure the crops.

Sticking inverted young *fir-trees* in the fields protects crops, it is said in Sweden, from seed-eating caterpillars.

Hemp, sown round a field, will attract small birds, which will also feed upon the insects.

No parasitic insects hitherto detected to check the increase of the surface-caterpillars.

Directions for rearing surface caterpillars, and breeding the moths from them.

The turnip-gall weevil is produced from the excrescences on turnip-bulbs.

These galls contain from one to four *maggots*, which feed upon the *bulb*; the galls are probably caused by some fluid from the parent-beetle.

These galls are formed in *summer*, and increase through the *winter*.

The *maggots* most probably change to *pupæ* in the earth.

The turnip-gall beetles are not uncommon in hedges, &c., in spring and summer.

Partridges pick out these *maggots*, and are very fond of them.

Anbury, I think, is not caused by insects; but the disease affords a suitable pabulum for many species.

Anbury and *fingers and toes* two distinct diseases? the former with knotted roots, the latter more forked.

Mr. Dickson's observations on *fingers and toes*.

Mr. Marshall's description of *anbury*: he considers it caused by the puncture of an insect.

A naked fallow recommended as a remedy.

Marl or *chalk* the most certain and lasting cure.

Teathing the barley-stubble will cause *anbury*.

Whether *wet or dry seasons* are most favourable to *anbury* seems to be doubtful.

The long pudding-turnip the most, the *swedes* and *rounds* the least diseased.

In the tap-root, *maggots*, *miles*, *rove-beetles*, &c., were living.

The *knots* on the roots *solid*, and in no instance containing insects.

Certain conditions of the *soil*, and *not insects*, cause *anbury*.

The *maggots* inhabiting the *anbury* lived

through part of the winter, and produced the "*Winter turnip gnat*" very early in the spring.

The *miles* may feed upon the larvæ, or the eggs, of the flies, &c., deposited in the anbury, or they might have been introduced by the larger beetles which they infest.

Rove beetles, called *Aleochara* and *Oxytelus*, inhabit decaying turnips in multitudes.

They are supposed to *nibble* and injure the roots of the young turnips, and they will also feed upon *maggots*: their own larvæ are found with them.

The *Oxyteli* are found every where, and inhabit *dung* in immense quantities.

Maggots found in August, and earlier, in the crown, or just in the base of the tap-root, which do great mischief.

They change to *pupæ* in the earth, and in three weeks they produce flies, called the *cabbage fly*, which live through the summer.

Two species, of similar habits, are known upon the *Continent*; and a fourth I bred from other *maggots*, which had injured the young turnip-roots.

They are exceedingly *mischievous*, as they will feed upon a great variety of roots; and inhabit *dung* in thousands.

They changed to a fly, called the *root-eating fly*.

A very useful *parasitic fly* lives upon these *maggots*.

Dipping the roots in oil or ley of ashes will preserve cabbages from the *maggots*.

As soon as *plants droop*, pull them up and burn them; and then pour brine or ley of ashes into the holes, and it will kill all that remain.

The *pupæ* may be collected from the roots, in gardens at least, with great advantage.

A dressing of lime and salt would kill the *maggots*, but it will not prevent turnip-galls from appearing.

The *lime and salt* should be mixed with the soil previously to sowing the seed, as they otherwise retard vegetation.

Soap-boiler's waste, and other alkalies, incorporated with the soil, will kill the *maggots*.

Soapsuds and *gas-water*, or *gas-tar*, will keep the flies from depositing eggs.

Refuse of *charcoal*, scuffled into the soil, prevented the same disease in *onions*, and the clubbing of *cabbages*, &c.

Rooks, sea-gulls, magpies, partridges, &c., most useful in securing crops from the attacks of insects.

Raw-dung, especially horse-dung, encourages the *maggots*, and should therefore never be spread in that state, not even in small quantities.

WINTER VETCHES.

I THINK it unnecessary to bring any argument forward to support the utility of winter or spring sown vetches. I would rather believe that there is not a man holding one half acre of land in Ireland that has not availed himself of this necessary auxiliary, and will at once mention here, that I conceive this crop may be successfully cultivated.

The best soil and preparation I conceive for the reception of winter vetches is a limestone soil, when a green crop has been raised the same year; the land having been first cleared and harrowed over. Any time in September or October is proper to sow the vetches at the rate of four bushels per Irish acre, and add one bushel of Rye. Many put in this crop with the plough, and it is advisable so to do where the land is dry and does not retain the winter's rains, but if the land be at all inclined to retentive qualities I would advise the following method: Mark out the land in six feet ridges, and having sowed it at the rate before mentioned, let the furrows be shovelled for cover; about three inches of cover is sufficient. I would give the preference to this mode, though it is more expensive, because I can in the spring mould my vetches, which I conceive is the greatest possible benefit to them. I would choose a piece of land under the lee of a plantation for the winter crop of vetches, as I am convinced we have some winters and springs in Ireland that vetches will not get through, and I would like to give this most essential crop all possible help.

If the land has a natural fall it is very desirable to make the ridges with that fall. G. D.

—*Irish Farmers's and Gardeners' Register.*

JOHN ROSE.

THIS celebrated man was gardener to the Earl of Essex, who had in those days (1665) a famous garden adjoining Essex House, in the Strand, where Essex-street and the adjoining streets now stand. In the employment of his noble patron, he evinced that taste and perseverance which rendered gardening an art of high estimation, and showed the people of England, that they had no occasion to import from Holland those fruits and flowers, not to say even culinary vegetables, which their own climate, soil, and industry, were fully capable of bringing to perfection. After leaving the service of the Earl of Essex, Rose became the gardener of the Duke of Somerset, who was a great patron of the rising science of horticulture. He was subsequently employed to lay out, arrange, and manage the gardens of the celebrated, or, rather, notorious Duchess of Cleveland, the extravagant mistress of Charles the Second; a woman, whose great beauty, violent temper, extravagant expenses, and headstrong ambition, all combined to render her one of the most re-

markable personages of a remarkable age. Rose had the good fortune to be a favourite of this capricious female; under his direction, the gardens, hot houses, conservatories, &c., at Dorney Court, the seat of the Duchess, were planned and carried to perfection. The remains of Dorney Court are still to be seen, though little now exists but a portion of the original house, and nothing but ruinous vestiges of the terraces, gardens, and conservatories, are to be seen. It was, when the writer of this notice visited it a few years ago, the property of Sir Charles Palmer, Bt., who, we believe, is since dead; the estate has descended to his heir. It is situated on the Bath road, a little beyond Salt Hill, on the left-hand side of the road going from London. These minutiae are mentioned, because it was here that the first pine-apple ever brought to perfection in England was grown, and it was John Rose, the subject of our memoir, who grew it. At Kensington Palace there is a portrait of Rose in oil colour, in which he is depicted in the garden at Dorney Court presenting a pine-apple to Charles the Second, who frequently visited the Duchess of Cleveland. A copy of this picture, in water colours, is in the possession of the London Horticultural Society. The picture itself has been engraved, but the impressions are now only to be met with by chance, or in the collections of professed antiquaries. It seems that the skill of Rose in the cultivation of the gardens at Essex House and at Dorney Court had by this time made him the most celebrated gardener in England, for he was now employed to lay out the gardens of the Royal Palace of St. James; the style he adopted may still be traced in the present garden, but little can be judged of his excellence in the design beyond a general outline. The gardens originally extended over the ground since in the possession of the Lord Carlton,* which is now covered with houses, and over the grounds of Marlborough House, which still exist as gardens, but which have undergone many alterations, and are at the present moment being laid out, by order of the Queen Dowager Adelaide, on an entirely new plan. It was in the gardens of St. James's Palace that Rose cultivated and brought to perfection the finest lines of dwarf shrubs in Europe, and proved himself, in his method of horticulture connected with the rearing of trees, superior to all the continental gardeners. So great was the eminence to which he arrived at this time, that all Europe acknow-

* That part of the grounds laid out by Rose, whilst in the service of Charles the Second, and which subsequently became the gardens of Lord Carlton, were afterwards the site of the pleasure-grounds of the palace of the late George the Fourth, who, as every body knows, called his residence "Carlton House." This palace and its grounds no longer exist; the improvements on the southern side of Pall-mall, and the entrance into St. James's Park, now occupy the ground on which they formerly stood.

ledged his high reputation, and the celebrated Monsieur de la Quintinge, the gardener of the King of France, declined his challenge to compete with him in the growth of dwarf shrubs.

Rose was not only a gardener—he was a man of very general talent, and considerable attainments in several branches of science and literature. This may be inferred from his being admitted into the society of most of the virtuosi of the age in which he lived. He is, moreover, justly celebrated for being the instructor in the art of gardening of the famous Mr. Loudon, who was his favourite pupil. Rose was, by the munificence of the Earl of Essex, sent in the early part of his professional life, to France, to improve himself in his art, and to study the style of the gardens at the Palace of Versailles. How well he employed his time, may be easily surmised from his subsequent reputation. He must have died before 1718; for though there is no record of his death, he is mentioned by Switzer, who published his *Iconographia* in 1718, as being dead at that time. Notwithstanding his being almost continually employed in the practical operations of his profession, he found time to write the following works on horticulture, most of which have now become exceedingly scarce.

“The English Vineyard Vindicated, or, the way of Making Wine in France.” “A Treatise on Fruits.” “An Essay on the Virtues of Coral.”—Exceedingly rare.

The preface to the *English Vineyard*, is written by Evelyn: this shows how much the work was prized. A few extracts from the work itself may not be out of place; they will show what our ancestors knew of growing vines.

Of the several sorts of vines, and what grapes do best accommodate with our climate in England.—Upon long and diligent observation of the species, I do chiefly recommend these following, to be the most proper and natural for the curious in our country, to exercise their industries upon, as from whence they promise themselves a recompense worthy of their expectations.

1st. The small black grape, by some called the cluster grape, a precose and early ripe fruit.

2d. The white muscadine, early ripe also, and a well-known grape.

3d. The parsley grape, so denominated from the shape and indentures of the leaf. It bears somewhat a smaller raisin or berry, but is of a brisk and delicious taste—mature by times.

4th. The muscadella, a white grape, not so big as the muscadine, though as soon ripe.

5th. The Frontinaque, both white and red.

6th. A new white grape, ripe before the muscadines, which I found in his Majesty's garden at St. James's, with a red wood and a dark green leaf. It ripens as soon in standard as against some walls, and is a closer bunch than

the muscadine. These are the kinds which I prefer before any other for the storing a vineyard, although there are several other sorts which I pass by, as not so applicable to our design, though very worthy of the curious, and those who affect variety, because they will require the artificial reflection, and assistance of walls to bring them to maturity.

FORMS OF FLOWERS.

The best way to obtain well formed flowers, is to select some of the best forms we already possess, without regard to the colour; and if the object be to obtain flowers of a good form, with the colours of one which is a bad form, it is proper that one of the ill-formed, but properly coloured flowers, should be placed among them. Suppose, for instance, we desired to raise a bright yellow Pansy of the best possible form; half a dozen of the best formed Pansies in cultivation should be procured, and placed by themselves in a good situation for seeding; then procure the best yellow one you can with regard to the colour you desire, and however ill-formed it may be, place it with the half dozen well-formed varieties. As these come into bloom, pick off imperfect flowers, and tie a piece of matting round your best, that the seed may be saved from the best only. With regard to the yellow one, it may be well to save that seed also, though, generally speaking, the form is more true to the parent than the colour, so that the hope would be rather to get a yellow flower from seed of the best formed ones, than to get a good formed one from the yellow variety which is bad. Suppose, again, we wanted a yellow moss Rose, having already several very pretty yellow Roses, not moss,—here we should try a moss, the best in habit and mossy quality we could find, and plant all the yellow Roses likely to assist in the operation round it. The Chinese are in favour of the seedlings from the moss coming moss, and the pollen of the yellow Roses impregnating it; but as artificial impregnation could be performed more easily than with some flowers, we should apply the pollen of the best yellow to every flower that came out on the moss, and see if this did not command success. With a pair of tweezers, a bunch of the anthers from the yellow Rose can be taken as soon as they exhibit their fine yellow dust, and apply this to the pistil of the moss Rose, having first removed all the anthers from the moss Rose away. In short, in all cases the habit and principal qualities of the parent may be expected, therefore the seed should be saved from the one whose habits and characteristics are required, and the plant it is impregnated with should be that whose qualities or character we wish to add.

PRECEPT FOR FARMERS.

"VALUE as you ought the experience of others, and your own will cost far less than without such aid; since, to use theirs, costs only an effort of memory, whereas, the price of your own will often be the loss of health, fortune, and character. Leave show to spendthrifts and fools, while you and your families consult only tasteful simplicity, comfort and usefulness, in all your arrangements and expenses.

"The only just means of increasing wealth are constant industry, true economy of time as well as money, well directed labour, and the regular application of a portion of your fair profits to increase your capital. Never expect your lands to give you much if you give them little; nor to make you rich if you make them poor. Therefore, always manure them to the full extent of your means, and they will ever make you ample returns in rapidly increasing productions.

"In all your farming operations, never forget that time, like money, if once lost or mis-spent, is for ever past recovery.

"Constantly arrange beforehand the daily work of your farms; then none of your labourers need ever be idle in waiting to be told what he has to do.

"Keep double sets of such instruments as are most used, and most exposed to wear and tear. The whole cost of extra sets will be amply repaid by saving the time lost in waiting for repairs where only single sets are kept.

"To keep good gates and fences, saves much time and labour in preventing trespasses; much loss of crops from depredations; and, best of all, it saves much wrangling and ill-will among neighbours about mischievous stock.

"If you wish to excel in your profession, the diligent culture of your mind is as indispensable as that of your fields.

"Encourage, both by precept and and example, the true spirit of husbandry; for it promotes harmony, good-will, and social intercourse, among all with whom you deal; it tends to elevate your own class to its proper rank; and, above all, it advances the welfare of your country, by promoting the most important of her great interests."—*Albany Cultivator*.

GARDEN LITERATURE.

THERE is a dearth of sound interesting matter in the *Chronicle*, and the *Gardeners' Gazette* is too warm for our quiet pages; the following are the best scraps we can find in the last three weeks' *Chronicle*:—

To keep Wasps from Fruit.—The best remedy to prevent Wasps from attacking wall-fruit is to plant close against or near the fruit tree *Symphoria racemosa*. In the year 1836 (when I made the memorandum), in my father's garden, we had a Moor-park Apricot with a

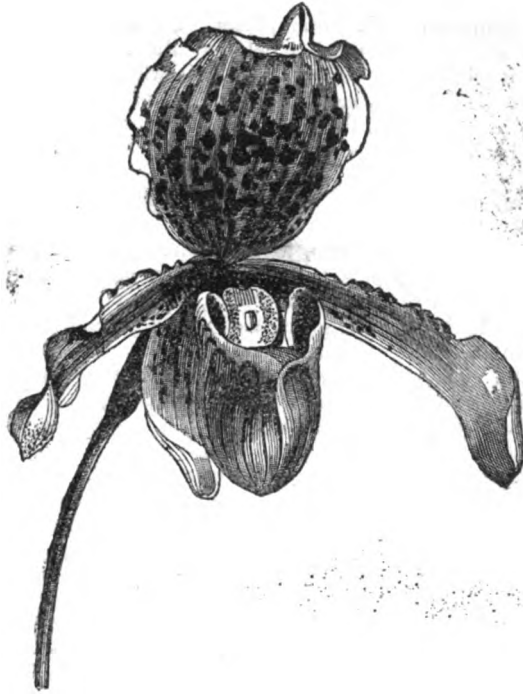
quantity of fruit upon it, and near to it stood in blossom *S. racemosa*, which the Wasps preferred to the fruit, as there was not a single fruit touched, although all day long the blossoms of *S. racemosa* were frequented by the Wasps.—*G. S. Wintle*.

Black Currant Wine.—To every gallon of water put 5 lbs. of Currants, picked from the stalks, and a pint of Raspberries. Boil these for an hour, and strain them off, without rubbing the pulp through the sieve; then add 2½ lbs. of raw sugar, and boil again for another hour; when cool enough, work it with a toast of yeast, and let it stand for three days in the tub to work, before tunning. In the course of four or five days afterwards, add a pound of chopped Raisins to every gallon, and stir it for a day or two with a clean stick, and bung it down when fermentation has subsided. Skim all off that rises in the tub before tunning, wash the barrel out with spirits, and add the latter in the proportion of a pint of spirits to five gallons of wine.—*Anonymous*.

Receipt for making Grape Wine.—Water 4½ gallons, beer measure; Grapes, 5 gallons, beer measure, crushed and soaked in the water seven days; sugar, 17½ lbs., at 10½d. per lb., the Grapes perhaps 5s. The cask in which it was made held exactly 6½ gallons, beer measure, and produce 34 bottles of wine clear. A bottle of the above wine kept ten years, and proved very good.—*London's Gardeners' Magazine*.

Roses.—The following list of twenty-four Roses comprises good free-flowering kinds for an amateurs garden, which are easily procured, and not expensive:—*Brennus*, carmine red; *Mordaunt de Launy*, pale blush; *Crested Moss*, rose; *Blush Moss*, pale blush; *Double Yellow Sweet-briar*, bright yellow; *White Sweet-scented China*, white; *Village Maid*, striped; *Elm-leaved Provins*, blush rose; *Unique*, white; *Moss de Meaux*, rose; *Globe White Hip*, white; *Rose du Roi (Perpetual)*, crimson; *Madam Desprez*, rosy purple; *Bizarre de la Chine*, dark crimson; *Madame Campan*, spotted; *Triomphe de Laffay*, white; *Duchess d'Angoulême*, rose; *Shailer's Provins*, pale rose; *Queen of Denmark*, blush; *Riego*, rosy lilac; *Parny*, slate; *General Lamarque*, dark crimson; *Jean Hachette*, rosy lilac; *Madam Hardy*, white.—*A. C. E.*

Improvement in the Cultivation of Hops.—The Rev. Mr. Formby, vicar of Frinsbury, has the credit of suggesting this, which consists in stretching a stout wire along each alley, to which wire the poles are fastened. The advantages are, that poles of much less value than those usually employed may be used; that injury from gales of wind is avoided; and that the alleys being open to the influence of the sun and air, the mould, that fatal disease of the hop, is prevented. At Halling, near Rochester, a garden of nine acres thus cultivated affords a most pleasing sight.—*Country Paper*.



CYPROPEDIUM INSIGNE.

THIS is one of the tender varieties of the great variety of plants which are known as Ladies' Slipper; some of which are perfectly hardy. The *Cypripedium Insigne* grows well in a warm greenhouse or moderate stove, though it will live, barely protected from frost, and in great heat. The first plant exhibited at shows in the metropolis was from Messrs. Rollisson's nursery, about ten years ago, but it had been a considerable period in the country. The sketch of the flower gives a very good idea of it, for there is nothing attractive in the colour. It is in the form that the curiosity consists. The plant is like the following:—



But every single heart of the plant, which increases rapidly in a stove, will throw up a stem and a flower; and the plant of Messrs. Rollisson, which had spread so as to fill a large pot, had perhaps twenty flowers. It is easily parted, to propagate, it will grow in equal parts of loam, peat, and leaf mould, and does well in a grapery.

METHODS FOR PREPARING MANURE.

THE best methods for preparing good, strong, and cheap Manure, and the most economical mode of applying it when prepared, in the growth of full crops of turnips and of corn, being the first steps in farming that ought to be attended to, the author is induced to recommend that much of the poorest land on a farm be thrown out of tillage; which will cause the parts that are in tillage to produce full crops. If the poorest lands will neither grow sainfoin or lucerne, they will serve for pasture or sheep walks if proper seeds are sown, and from thence the sheep may be folded on those parts of the farm which are in tillage; which almost insures a good crop of corn so far as the fold Manure goes. On some farms, the poorest lands are too wet for sheep, but such may be rendered healthy and made fit for them by proper draining, chalking, and well ditching all round the land. There are men in all parishes to do the needful labour, which would ease the poor rates—the thing most wanted in the present times. Another good plan to help to keep up the heart of the land to bear

full crops is, when the farm-yard is free from dung, let it be covered all over with the best mould that can be got; it might often be procured from the outside of the fields, by causing the plough to go nearer the edges, and thereby gain a great quantity of land. The author proposes to cover the yard about two feet thick, the mould, after laying there, and being well foddered upon by cattle, will become a good, strong, and cheap Manure. He recommends, also, a great quantity of young kind growing pigs, to be kept in the farm-yards. Even if the growth of them only pay for their food, there will be great profit from the extra strength of the yard dung, and the mould underneath. If a great quantity of pigs are kept there, it will cause the Manure to be so strong in its nature, that the turnips will grow so rapidly from it, as to preclude the danger of the fly destroying the crop, if the seed be good.

When the mould and dung are cast together in the yard, before being carted out for turnips, as salt is so cheap, it is as well to mix a little with it; if only one sack to the whole yard it will be of great service, and reward the farmer much. If salt be sown on the land in proper quantities it is of great benefit; but if sown too thick it will destroy every plant that grows, and prevent further vegetation. When Manure is made so strong, a much less quantity per acre will make the turnips very good; then feeding them off the land with sheep, with a full allowance of hay, will be of the greatest benefit to the future crops of corn, and cause an amazing increase of straw. So that Manure made in this manner will ensure a good crop of turnips, and be profitable to the farmer in other ways; for it will not only enable him to keep more sheep, but his land by these methods will produce so much more straw, that his Manure heaps will be double the size they were the preceding year, and his corn will not only be better in quality, but greater in quantity.

As the author has so earnestly recommended a greater quantity of young growing pigs to be kept in the farm-yard to assist in making Manure, he, also, from experience, recommends that they have separate lodgings for the night, not more than ten in a place together; for if pigs are allowed to herd together, and they will if possible, those that are in the middle of the lot one night will be so much heated, that the next night they will be at the outside; so that by violent heats and colds their health will be so much impaired, that they will not be found to thrive, which, of course, cannot be profitable to the owner. Many farmers keep only ten or twelve pigs, when they should keep seventy or eighty in their yards, to increase and strengthen the Manure; for turnips are the mother of corn, but are very difficult to raise, except good strong Manure be applied to the land, to make them grow quicker than their enemies can devour

them. So that much depends on the strength of the Manure to raise the crop, and when saved, it will be of a more fattening nature in proportion to the strength of the Manure. The author has seen in many farm yards, where very little stock has been kept on the straw, that the dung has been so light and weak, as to be scarcely worth the expense of carting it on the land; the loss, consequently, on the present and future crops is incalculable.

As clover roots are a good Manure of themselves, farmers should not be sparing of the seed; they generally sow it too sparingly. The author never saw a bad crop of corn after a full thick plant of clover or trefoil, except when eaten by the slugs, owing principally to its not being well and closely fed down with sheep, before being ploughed and sown with wheat. If clover and trefoil be as thick as a mat on the ground, crops of corn are sure to be the better for it afterwards. Most farmers have an opportunity of purchasing Manure, and as it is the author's intention to point out the most profitable plans, he recommends to every stock farmer who occupies from two to three hundred acres of land to purchase good strong Manure, enough to well dress over about five acres for sweet turnips.

What he means is, for the farmer to have an extra five acres of good sweet turnips, as a reserve for stock of all kinds, when most in need, which is in the month of March, that being the most precarious month in the year for all kinds of stock. The extra five acres will well support them until the grass begins to grow, so as to pay well for the Manure purchased; as five acres of sweet turnips, at sixpence per bushel, will amount to £160, if five bushels per square rood. Five extra acres of good sweet turnips, for the month of March, will not only be found very profitable to the farmer to enable him to well support an extra quantity of sheep and other stock, but the said five acres of land will produce extra good crops of corn for years after. Simple as this plan may appear to many, yet it may be relied upon to benefit the farmer to a great amount, on a long lease of his farm.

The author thinks it a good plan, when the greens of turnips are growing so fast as to injure the root, as they are required to last the sheep until the middle of April, to plough them in, which will preserve the turnip, and make the land kinder for barley.

The way in which many farmers "*plough and sow themselves out of doors*" is, when they plough and sow too much land; causing light crops of corn, by not keeping up the heart of the land by dressing it well for turnips. The author has seen one hundred acres of middling land which were sown with turnips, after being lightly dressed over with weak Manure, produce only half a fair crop, and barley after in the same proportion. Now it appears to the author

to be evident, that had the whole of the Manure been made stronger, by keeping more stock in the farm-yard from whence it was taken, and had it been put on only fifty acres for turnips, that it would have produced more sheep-feed than the hundred acres highly manured, and barley also in the same proportion afterwards. It is therefore clear, that cultivating the extra fifty acres indifferently is not labour lost, at 2l. 10s. per acre, but the loss of the hay or sheep-feed which it might have produced also. If we reckon the hay and sheep-feed at only 2l. per acre, and add the cost of turnip-seed, of sixty sacks of seed barley, and the expense of hoeing fifty extra acres of turnips, we shall find that the labour and expense thrown away in thus growing a less quantity of turnips and corn on a hundred acres than might have been grown upon fifty acres under a better system of management, will occasion a loss to the farmer of about 280l. This is the sense in which he is said to "*sow himself out of doors.*"

It is no wonder that so many farmers are ruined by growing little crops, if we consider the high rents, tithes, poor-rates, highway rates, labour, and blacksmith's and wheeler's bills; all of which must be paid from the light crops; and as the land is now subject to so many various and heavy expenses, it is proper to keep up the heart of it to grow full crops to meet them; and the increase of Manure will be in proportion to the goodness of the crops, and cause the land to produce straw enough to manure itself. When the farm-yard is well stocked, as before stated, it will enable the land to meet the expenses it is subject to, with pleasure and profit to the cultivator: from this mode of treatment the dung-cart is called the best farmer.

When the farm is deficient in cattle and pigs, it not only causes a scarcity of bacon, but of grain; although the occupier of the land stands in need of the most profitable plans to meet the expenses it is subject to. The difference in the strength of Manure is as great as between strong beer and small; a very little strong beer strengthens a hard working and fatigued man, in the same manner as strong manure affects the land.

Farmers should bear in mind to make use of all their Manure to increase sheep-feed, previous to the land being sown with corn. When land is dressed for turnips and young seeds for sheep-feed, the additional dressing left by the sheep, not only causes the land to be doubly dressed, but it might be relied upon, that the succeeding wheat crop will be less subject to blight than when the land is dunged expressly for it.

HINTS THAT MAY BE USEFUL.

THE best thing you can do with your Geraniums is to take them into your dwelling-house, and of nights remove them from the window to

the middle of the room lest the frost catch them, and even then they will only be safe in the room when there has been a fire. If you only want to preserve the sorts you may then cut them in very much, and prune the roots close, pot them in smaller pots, dig a hole in the ground, two or three feet deep, put them all side by side, close, cover up the hole with boards, and a good foot of straw or tan. Here they may lay undisturbed, for a month's frost, or be uncovered in fine weather, but they will require no water; or they might be plunged into the ground to the rim, and a garden frame be put over them, but these would require a foot thickness of mould all up the wood work, which is outbuilt with turfs, and when covered up of a night against frost must have a great quantity of straw or litter of some kind to prevent the frost penetrating. We are presuming that a man has no greenhouse.

CLASS SHOWING AS A TEST FOR SEED-LINGS AND A HELP TO THE SCIENCE.

THIS is an excellent test when the showing and judging is honest, and the test is properly applied, but it will mislead worse than any thing if there be unfair play—that is, if the thing be not honourably conducted. For instance; if a judge act wrong, either from ignorance or design, and places a new and bad thing before an old and a good one, the public will be deceived into a belief that the new flower is an improvement on the old one, and it will lead to the disappointment which all have had to deplore more or less; therefore, the necessity of good judges is as great as if there were stands in competition, and these judges should be the same for given periods when once elected, because, as we have before maintained, they are at once made responsible for their acts, and this responsibility, presuming them to be able, insures a careful and proper award. But class showing may not be a safe test in all cases, even if the judge be able and honest, for a seedling may beat a named flower, because the named favourite is badly shown, and not because the seedling is really better, hence the danger of trusting implicitly and entirely to the result of a class show. It is only safe when there is a series of shows, and all more or less corresponding, that they may be taken to indicate the true value of a flower. But class showing is useful in other respects—it enables small growers to compete with success, and therefore ought to insure better flowers. Whenever a fine specimen is produced the owner is encouraged to show it, because it is almost sure of a prize, and when the flowers are placed in classes, the young florist obtains a very useful lesson by noting what puts one flower before another; whereas, in stands of flowers, his attention is divided between twelve, or perhaps twenty-four blooms, and the reasons are not so

easily seen by the inexperienced who wish to learn. Upon the whole, then, class showing must be deemed the most useful in promoting the advancement of the science. When the best scarlet, the best lilac, or the best any thing is entitled to a prize, we have only to look at and compare a single bloom, and there is much less difficulty to judge the points on a single flower than the points in a dozen. However, there is a general desire to show stands of flowers as well as single blooms, and in this case the best plan is to allow the losing stands to be broken up, and the best blooms from each to be shown in classes. It in the first place gets rid of the bad stands, and in the next place retains in the classes all the good flowers; but it is the class showing alone which gives us a notion of which are the best flowers, for ten or eleven good flowers may always take through one or two inferior, so that the fact of a flower being in a winning stand, says very little for it, while its beating in a class is, if the award be honest, strong presumption of its superiority. There is this season a curious instance of a seedling beating all the named flowers in its class. We allude to Mr. Keyne's standard of perfection. A very extraordinary flower in the same class as Springfield Rival, yet when both are perfect, a decidedly superior bloom. It is one of the few Dahlias which possess four out of the five properties in almost perfection. It conceals the only blemish of importance in the petals, and the only real deficiency is in the eye sinking; but even in this, it is not so much sunk as the Springfield Rival. The standard of perfection is very round, very double, very symmetrical, and very rising in the face. The under petals turn over, which, in ordinary made dahlias, is a dreadful fault, but in this the petals lay so close to the row above them, that they conceal the portion turned over completely from the view. It is the nearest approach to the compactness of the *Ranunculus* that we have in cultivation. At the Surrey Horticultural and Floral Society, which is perhaps the most severe in its condemnations, this Dahlia was placed first in its own class, and one bloom was placed for the prize, awarded to the best Dahlia of any class or colour.

A DESCRIPTION OF

A FEW SEEDLING DAHLIAS FOR 1844.

STANDARD OF PERFECTION.—*Keynes.*—This is one of the novelties which we seldom meet with, and is as singular in its way as the old Springfield Rival was when we first discovered it among some hundreds of the worst seedlings we ever saw. It is as round as any flower in cultivation, as complete an unbroken circle as could be drawn with the compasses, as globular in front as possible. It is symmetrical to a hair, and as double as a *Ranunculus*. Thus four important

points out of five are in perfection. The deficiency is in the eye, which in all flowers of the same make is sunk a little, but will no doubt be occasionally caught a perfect Dahlia. It is so remarkable as to be instantly recognised among a thousand. We have not seen it growing, but in the four or five lots of blooms we saw at Kingston, Crown and Anchor, Swan at Stockwell, and the Surrey Gardens, there was every thing to indicate constancy. It is a deep crimson, of rather a velvety texture, but not very thick. It is the flower of the season, and must be had. We hope excessive propagation may not spoil its first years' bloom.

SIR J. STEWART RICHARDSON—Sharpe.—A flower as much the make of the Duchess of Richmond as possible, but with the advantage of more stuff in it, and broader petals. It is a bronzy purple in colour, and all the blooms we have seen were good in the eye. Indeed, one lot which came had dropped two-thirds of their petals, so that the form could not be seen, had retained their eyes perfect: size full up to, if not above the average, and petals rather stiff. It will be a very useful flower even in a stand of half a dozen.

ESSEX BRIDE—Turville.—A pretty lilac, full average size, a fine clean petal, gently cupped, moderately round in the outline, beautifully symmetrical, rather a flat face, but a free opener. The eye very pretty when perfectly bloomed, but we suspect a little treacherous. It is a bright and very attractive variety, and when well done a decided acquisition to a good stand.

LADY ANTROBUS.—A very pretty edged white, round, full faced, well up in the centre, tolerably symmetrical; and every bloom we have seen at different places and times have been improvements upon Beauty of the Plain in its best state. The petals are rather thin, but they retain their form well, and the flower has a very good eye. The edging in all we have seen has been very perfect, every petal being laced all round. It is by far the best of the light flowers shown this season, and has no decided blemish, although the points are not all possessed of the first order. It is a very desirable acquisition to any stand.

LADY SAINT MAUR—Brown.—A tipped white, of very large size, and when large somewhat coarse, but when small and perfect a very beautiful variety. The petals are large, the flower round, bold, and well up in a young state, and eye rather pretty, composed of unbloomed strongly tipped petals, but loose and treacherous when full grown, besides being too large for a stand. Mr. Goldham's doctrine is, that if a flower ever has been good, it will be so again, and it seems very generally admitted, that as it was shown at Windsor, it was the most perfect flower ever seen. Our taste may differ, but we should prefer a fine specimen of Bridesmaid to those we have seen.

CONSOLATION—Widnall.—A dark maroon flower, very compact, good centre and eye. Size, rather below the average, but inasmuch as they are produced from side shoots and second growth, after the plants were cut to pieces with the hail storm, we saw the flower to a disadvantage. It is quite double enough. In the state we saw it at the Slough show, we thought it would be a sluggish opener, but the blooms we have received since have entirely removed that impression. The petals hardly touch one another in some of the rows, but the front view, as well as the side view, exhibits no deficiencies, in consequence of the compactness of the arrangement of the petals. The flowers were certainly not well grown, and the only drawback was that which good growth might entirely remove.

LEANDER—Bevan.—A bright rose coloured flower, rather above the average size, moderately round, very double and symmetrical, remarkably showy, and moderately rising in the centre and face. The petals are stiff and cupped. The eye very little, sunk, and the variety altogether an acquisition, for it would form a very fine back row flower comes now and then with florets.

EMMA NOKE—Keynes.—A pinky or blush white, rather under than over the average size. Moderately round in the outline, rising well to the centre, and a good eye, bleaches when grown in the dark, and in that state runs the whites very hard. The petals are small, but there are plenty of them, and they cover one another well. We hope it will be honestly announced as a blush white, and not be put forth for a pure white as others have been, and so, when grown as garden ornaments, prove to be another colour.

NEW ROSE—Widnall.—Bright pretty Rose-coloured flower, not too much cupped, well made, and symmetrical, double enough, and the eye, though sunk, above the average of those on cupped flowers, colour very desirable, and a good size; a beat on many Roses.

RAPHAEL—Brown.—A dark flower, a full size, double, and symmetrical, a showable, but not a first-rate eye. The flower in its best state a decided acquisition to a stand.

MODEL—Bourne.—A dark purple, well up in the centre; petals occasionally notched or rough at the points, but nevertheless shown well at times; very double, forms almost a ball, and has every appearance of constancy. A prejudice was excited against this flower by the judges at the Surrey Gardens, who disgusted every body, by placing it before the Standard of Perfection and Lady Antrobus. We have not yet done with the subject of new Dahlias.

TWELVE WINNING DAHLIAS.

Purple Metella Bigbie's.
Crimson Standard of Perfection Keynes'.
Yellow Prince of Wales Dodd's.
White Antagonist Bragg's.

II.

Orange Aurantia Spary's.
Scarlet Eclipse Widnall's.
Lilac Essex Bride Turville's.
Dark Essex Triumph Ditto.
Tipped White Lady Antrobus Spary's.
Bright Rose Leander Bevan's.
Pale Rose Dowager Lady Cooper. Jackson's.
Tipped Yellow Princess Royal Hudson's.

These are established favourites, or excellent new ones, that have been winning flowers in their classes, and must be grown to secure any thing like a chance of success where all growers are even. H. T.

THE PROGRESS OF FLORICULTURE.

It is no longer doubtful that we have commenced a new era in the science of Floriculture, and that it is rapidly advancing. We feel gratified at the improvement already manifest, and we think the persons chiefly interested in the prosperity of this branch of gardening have done well to second the efforts of one who has done much for them in former days, and can do it again. We take some credit ourselves for this improvement. We have laboured warmly in the cause, and have provided in this very work a complete text book for the florist. Mr. Glenny's writings on the properties of flowers were scattered through the columns of the Gardener's Gazette, the pages of the Horticultural Journal, the reports of the Metropolitan Society, and various other publications; they have been revised, collected, and reprinted in the GARDENER, with many that had not been published before in any form, and we are continually adding to the number. To this very fact do we attribute the first turn of the tide, which was ebbing fast, for no one will deny, that but one year since the most enthusiastic amateurs were giving up the pursuit as a fancy, and the principal exhibitions had declined, until there were scarcely any competitors: judges were giving prizes to the worst instead of the best productions, whenever there happened to be a second shower, and exhibitors were rather sharing in a lottery than seeking honourable rewards. We consider Mr. Glenny's papers among the most valuable we have, when he confines himself to Floriculture, or, indeed, to any practical subject; and, were it not for the difficulty of getting him to write without censuring somebody else, we should have a good deal more of his writing than we have. We however take credit for laying the foundation of a new era, by collecting and publishing, under his own revision, the rules which he had laid down for estimating the merits of flowers, and for urging the necessity of abiding by them. As one of the signs of the times, we mention the fact, that some of the leading growers of the Dahlia have sent a requisition to Mr. Glenny, soliciting him to undertake the management of a show on a grand scale, and have subscribed their names for five

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guineas each, that it may be conducted as he of old conducted the exhibitions of the Metropolitan Society, and Mr. Glenny has consented, on condition that the remainder of the leading growers join in the subscription. We have turned to one of the Salt Hill shows, that we might judge a little the extent upon which it was held; and a list of the prizes awarded will give a tolerably good notion.

Class the first—the best one hundred dissimilar varieties.

First prize—Mr. Brown, nurseryman, Slough.

Second—Mr. Mountjoy, ditto, Ealing.

Third—Mr. Wilmer, ditto, Sunbury.

Fourth—Mr. Catleugh, ditto, Chelsea.

Fifth—Mr. Gains, ditto, Battersea.

Sixth—Mr. Jackson, ditto, Kingston.

Seventh, Mr. Cormack, ditto, New Cross.

As the prizes were given to two-thirds of the number of stands, this supposes three or four losers; but when did any exhibition, unless it was the Metropolitan Society's, comprise seven winning collections of one hundred varieties? Let us proceed to

Class the second—the best twenty-four dissimilar blooms.

1. Messrs. Brown, of Slough.
2. Mr. Cormack, of New Cross.
3. Mr. Lane, of Berkhamstead.
4. Mr. Wilmer, of Sunbury.
5. Mr. Gregory, of Cirencester.
6. Mr. Pamplin, of Hornsey.
7. Mr. Mountjoy, of Ealing.
8. Mr. Catleugh, of Chelsea.
9. Mr. Hill, of Hammersmith.
10. Mr. Stewart, of Salt Hill.
11. Mr. Gains, of Battersea.
12. Mr. Jeffreys, of Ipswich.

Independently of these classes which were confined to dealers, there were other classes for amateurs and gentlemen's gardeners, one class collections of fifty, and one stands of twelve. This may remind the trade of the contrast now presented at the very best exhibitions. There is no flower so useful or so beautiful in its season as the Dahlia. It is easily grown, but it gives a good opportunity of exercising skill to produce it in the best style; hence, it is a flower which every body with a rod of ground may cultivate to advantage. It is a flower which perpetually offers to us new varieties, and its sportive character gives an impetus to the raiser of seedlings, although he is not always rewarded with success. The people of Bath, we are told, placed the Hollyhock before the Dahlia, and gave it more prizes. Now, we very much doubt the state of mind of the people who caused this, because the Hollyhock in its very best state has not one requisite quality for a cut flower. We do not object to the Hollyhock coming in for its share of prizes, on the contrary, we should like to see any flower which there is room to improve taken up as a subject for shows, but to place a flimsy,

ephemeral, ramping plant, like a Hollyhock, which is rich only in its place in the garden, before the Dahlia, which is lasting and symmetrical to a degree, is to qualify oneself for Bedlam;—at least, such is our opinion. There is yet much to be done with the Dahlia, and we should be sorry to see the flower neglected. Who, then, so much interested as the trade in giving life to this branch of Floriculture? Assuredly none. We shall be glad to see all the dealers in the country come forward to give a spur to the cultivation of the flower, and they cannot choose a better leader than the person we have named. Turning from the Dahlia to the Carnation and Piccotee, we have already published the particulars of a sweepstakes, in which Messrs. Dickson, Bates, and Keynes, having chosen their thirty flowers to show from, are to exhibit twelve blooms, and have chosen Messrs. Neville and Glenny for their judges on the occasion; Mr. Dickson, also, gives a silver cup for the best twelve blooms at the South London Florist's Meeting; but why not (as the want of regularity and order, and sound judgment at almost all shows seems to have destroyed the confidence of exhibitors) the trade unite, subscribe, and establish, a really good exhibition, at a place where persons introduced can see them. These isolated prizes are rarely competed for with any spirit, are seldom awarded with any justice, and never advance the interests of the science. The multiplication of classes instead of prizes is one of the greatest mistakes that was ever made. It divides the strength of the exhibitor, destroys the interest of the show, and spoils the beauty of the stands. It is all wrong together; nobody wants to see one man carry off three or four principal prizes, and it is not to the advantage of the show that he should do so. It opens a wide field for doing wrong, and we do happen to know of a certain person in Kent who collects his blooms very industriously when the stake is worth showing for, and he could as easily collect for two stands as one. Now, Kent is a very large county, and nobody but the worthy man himself can know who we mean; nevertheless, the GARDENER AND PRACTICAL FLORIST is read very much in Kent—Kentish people write very often to us—and there are always plenty ready to tell us what we ought to know. There are, we hope, very few men who will show other people's flowers, and solemnly declare, and sign their name to the declaration, that they are their own growth and property. Now, where there are numerous classes to show in, the collectors are sure to beat the people who grow their own, and this is one great reason why we would rather multiply prizes than classes, and why there should not be much difference in the value of the prizes. The whole secret, as we were told by Mr. Dennis of the King's Road once, the whole secret of the success of the shows we have mentioned consists in the plan of

making the prizes not too high, and to graduate downwards. For instance, if we had thirty pounds to give in prizes for any show, the highest should not be more than five guineas, the second should be four and a half, the third four guineas, and so on down to half a guinea. How often do we see two stands so near alike in merit as to puzzle the judges, yet one is to have a large prize, the other nothing, or a small one; but, in the plan we propose, the idea of which we admit we take from Mr. Glenny, the prizes are so numerous, that people who would never attempt to compete where only one or two could get it, will strive their utmost to exhibit. This was the nature of the prizes at the show we have quoted from, and the effect has always been alike, so, at least, we have been informed, and we are informed on the same authority,—one of the very men who blames himself—that Floriculture never flagged from the year 1832 until the trade itself neglected to support the Metropolitan Society. If the fact be so, we rather think it will be unnecessary for us to dictate as to their proper course now. According to all admissions, there has been no substitute for it; nothing that has done so much, or could do so much—nothing in which the public have so much confidence—no society whose awards were considered such true indications of merit. The attempt to build a society on its ruins was a failure. The neglect of it, and of those who were the life of it, was a mistake.

The influence which it was intended to destroy was powerful even when unsupported, and the best proof we can offer of this is the simple fact that the whole trade was beguiled into a new society supported by the two newspapers, and the very random paragraphs which its opponent launched, counteracted the influence of both the gardening journals and sent forth their withering influence against the society itself. But Floriculture is advancing, that influence which was unfortunately opposed by some and rejected by many is at work again, and the low ebb to which many floral societies were brought, will end in dissolution to make way for others, or to amendment. But we almost fancy we can trace much of the evil under which Floriculture had degenerated, to the multiplication of societies, and the multiplication of societies to shere envy. A nurseryman is too apt to want a show at home, and if he wants it he generally has it. But then he wants to win all the prizes and very soon offends or disgusts the exhibitors who think he ought not to show for prizes. The feeling is natural enough; what chance has a distant exhibitor in competition with a nurseryman on the spot? What are feelings of a customer when he is beaten by the man he purchases his plants from? There is a degree of short sighted selfishness in the proceeding, and we see the effect in all the places where the nurseryman exhibits and takes prizes. The

trade will not support the show because they have no chance in competition; the people on the spot will not show because their own nurseryman beats them, and they drag on a miserable existence, made up with a turn out of the whole stock of the nursery; then as nobody goes to see mere nursery plants the public get disappointed, and then they refuse to support it. Floral societies should be attempted no where without ample means, and an independent working man of business for a secretary. Its rules should be few and stringent. Its classes of flowers few; and the prizes many; and if there be a nurseryman on the spot he should make his election. He should have nothing to do, with the business, or nothing to do with showing for prizes; whichever pleased him best. This wins attention on the part of those near the metropolis. It is the great number of public shows that divides the interest and takes off the novelty. The only second rate exhibitions that really advance the science are those in which the members alone compete, and the members alone dine over their flowers, and make them furnish them after dinner talk. These when conducted well are the life and soul of Floriculture. The admission of the public destroys all chance of enjoyment among the exhibitors, who are snubbed by some petty officer if they attempt to stop and look at their own flowers. It is therefore quite necessary to encourage those societies which keep their shows where nobody can intrude, as a sort of nursery for the more extensive exhibitions. The sooner the public shows are reduced in number, and increased in importance, the better it will be for Floriculture, and the more select societies there are the better will the large and important public shows be supported. A man does not mind being hurried a little in the season to attend the principal exhibitions, but he makes up his mind to abandon his flowers to their fate and see what he can see of other peoples. Thus the private shows improve a man's mind; the public ones enable him to add to his collection; but it is only when, as in the case of the Metropolitan Society, the exhibition is sufficiently important to bring growers from all parts of the country. Let us then entreat all persons concerned in public exhibitions, to abandon them at once or place them on an effective scale. Now is the time, that no opportunity of advancing the success should be lost.

Encyclopædia of Flowers.

THE HONEYSUCKLE.

Called by Miller *Periclymenum*, comprises a series of stove, greenhouse, and hardy plants, of which the hardy are the most beautiful. Linnaeus joined it to the *Honicera* of Pluner, and the *Chamæcerasus* of Tournefort; but as the

flowers of those now described differ greatly from the remainder, Miller separated the following, which are the subject of our present notice :—

The species are—1. *Periclymenum* (*Sempervirens*). Perfoliate, evergreen, Virginia Honeysuckle, which always flowers, commonly Trumpet Honeysuckle. 2. *Periclymenum* (*Racemosum*). Honeysuckle with yellowish flowers growing in bunches, and a snowy fruit. 3. *Periclymenum* (*Verticillatum*). Another tree-like Honeysuckle, with infected branches, and a coral-coloured flower. 4. *Periclymenum* (*Germanicum*). The German Honesuckle. 5. *Periclymenum* (*Italicum*). Italian Honeysuckle. 6. *Periclymenum* (*Vulgare*). Honeysuckle with a corymbus of flowers terminating the stalks, hairy leaves growing distinct, and very slender branches, commonly called English Honeysuckle, or Woodbine. 7. *Periclymenum* (*Americanum*). The evergreen Honeysuckle, having beautiful flowers.

The first sort grows naturally in Virginia, and many other parts of North America, but has been long cultivated in the English gardens by the title of Virginia Trumpet Honeysuckle. Of these there are two varieties, if not distinct species, one being much hardier than the other. The old sort, which came from Virginia, has stronger shoots; the leaves are of a brighter green; the bunches of flowers are larger, and deeper coloured than the other which came from Carolina. These plants have the appearance of the common Honeysuckle, but the shoots are weaker than any of those, except the wild sort called Woodbine; they are of a purplish red colour, and smooth. The leaves are of an oblong oval shape inverted, and closely surround the stalk; of a lucid green on their upper side, but pale on their under. The flowers are produced in bunches at the end of the branches; these have long slender tubes, which are enlarged at the top, where they are cut into five almost equal segments. The outside of the flower is of a bright scarlet, and the inside yellow; they have great appearance of the Honeysuckle, but are not so deeply divided, nor are the segments reflexed. They have no odour; but for the beauty of their flowers, and their long continuance, together with their leaves being evergreen, they are preserved in most curious gardens.

These plants should be planted against walls or pales, to which their branches should be trained for support, otherwise they will fall to the ground; for they cannot be reduced to heads like many of the Honeysuckles, because their branches are too weak and rambling, and are liable to be killed in severe winters.

The second sort grows naturally in Jamaica; this hath many slender branches which cannot support themselves, but trail upon any neighbouring bushes. They grow eight or ten feet long, are covered with a brown bark, and garnished with spear-shaped leaves about two

inches and a half long, and one broad in the middle; of a lucid green on their upper side, but pale on their under, standing by pairs opposite. The flowers come out from the side of the branches at each joint; they are ranged on each side the footstalk in long bunches like currants. The bunches come out opposite; they are three or four inches long. The flowers are small, of a yellowish green, and are succeeded by small berries of a snow white colour, from whence the plant is called Snowberry-bush in America.

The third sort grows naturally in some of the islands in the West Indies; this rises with a shrubby stalk ten or twelve feet high, sending out many slender branches, covered with a light brown bark, garnished with oval leaves near two inches long, and an inch and a quarter broad, four of them coming out at each joint in whorls round the stalk. The flowers come out in round bunches at the end of the branches; they are of a deep coral colour on their outside, but of a pale red within. This was found growing in Jamaica by the late Dr. Houstoun, who brought it to England.

These two sorts are too tender to thrive in this country without artificial heat; they are propagated by seeds, which must be procured from the countries where they naturally grow, for they do not ripen seeds here. These should be sown in pots, and plunged into a moderate hot bed, where they may remain till the autumn, for the plants rarely come up the first year; so the pots should be removed into the stove for the winter season, and the following spring placed on a fresh hot bed, which will bring up the plants; and when they are fit to remove, they should be each planted in a separate small pot filled with light earth, and plunged into a fresh hot bed, shading them from the sun till they have taken new root, after which they must be treated in the manner as other tender plants from those countries. As the plants obtain strength, they should be more hardily treated, by placing them abroad in a sheltered situation for two months or ten weeks, in the warmest part of the summer, and in the winter they may be placed in a dry stove, kept to a moderate temperature of warmth, where they will thrive, and produce their flowers in the autumn.

The fourth sort is the common Dutch or German Honeysuckle, which has been generally supposed the same with the English wild sort called Woodbine, but is undoubtedly a very different species, for the shoots of this are much stronger. The plants may be trained with stems, and formed into heads, which the wild sort cannot, their branches being too weak and trailing for this purpose. The flowers are of a reddish colour on their odour. This sort flowers in June, July, and August. There are two other varieties of this species, one is called the long blowing, and the other the late red Honeysuckle.

The fifth sort is commonly called the Italian

Honeysuckle; of this there are two or three varieties, the early white Honeysuckle is one; this is the first which flowers, always appearing in May. The other variety is the yellow Italian Honeysuckle, which is the next in succession to the white.

The sixth sort is the common wild English Honeysuckle or Woodbine; this grows naturally in the hedges in many parts of England. There are two varieties, one with white, and the other yellowish red flowers. These appear in July, and there is a succession of flowers till the autumn.

There is also a variety of this with variegated leaves, and one with cut leaves somewhat like the leaves of Oak, and one of these with variegated leaves; but these are accidental varieties.

The seventh sort is supposed to grow annually in North America; this hath strong branches, covered with a purple bark, which are garnished with lucid green leaves embracing the stalks, which continue their verdure all the year. This sort begins to flower in June, and there is a succession of flowers till the frost puts a stop to them, so that it is the most valuable of all the sorts.

Independently of the varieties or species which have been familiar many years, we have multiplied the kinds of this beautiful shrub by hybridizing, and had not the common or familiar sorts been already so fine, much more than has been done must have been achieved. All however in our opinion are inferior to the originals at present, and the common woodbine or the Dutch variety which appears in all respects, but the size of the flower like it, are in our estimation the most handsome. The quantity of bloom in proportion to the foliage is so great, that when in full flower we can hardly see a leaf, and its fragrance fills the air for an immense distance, while some of the varieties or species are poor in quantity of bloom, and poorer in perfume. The chief difference between the large and abundantly blooming kinds, is in the shade of the flowers, some being rather darker than others, and although, when (as in the Derby arboretum) a collection of the hardy kind are grown close to each other, this difference is very manifest, it would not strike any common observer who saw one at one place and one at another, at different periods of time, that there was any wonderful odds in them. At the Derby arboretum we saw several in full bloom, called by different names, and others which were not in flower, and these were trained upon iron supports to exhibit their beauties *en masse* like pillars of flowers with large heads, and had they all been flowering together they had been still more interesting. If we were growing all the species and varieties we should group them so as to bloom together; that is, put those together which bloom at one time, and not spoil the effect by adding those which mar the

appearance of the beautiful flowers; for whatever may be said of the modern introductions or of the kinds not hardy, and the species from which the Honeysuckle was separated, the latter is the most interesting; in short, it may be said, of all the shrubs, which combine fragrance and beauty in their attractions, give us the Honeysuckle. Whether we find it in our native woods, or see it in the most finished shrubberies, it stands boldly forth the most beautiful in the group, and we like it the better because it is tractable, and may be moulded or trained to any form, from the lowly bush to the lofty climber, or the neat and elegant standard. Mr. Paxton, in his *Magazine of Botany* for the present month, has given some recommendations as to the culture of the plant. He says:—

Possessed of such sterling charms, it ought to be cultivated in the gardens of all, whether peasant or peer, and in every variety of form which its nature will allow. As it is exceedingly accommodating with regard to treatment, it seems much to be regretted that, in most instances, it is merely grown in those artificial circumstances where a wall or a trellis, or something equally formal, is afforded for training it over. Supported by a pole, so as to compose a pillar, it is hardly ever to be witnessed; pruned into a dwarf bush, and thus making a fine border shrub, it is still seldom seen; trailing over rock work or a rocky bank, we have never yet observed it; nor have we ever noticed it planted thickly as a bush, and forming entangled beds, nor growing amongst ivy, nor planted extensively to twine round the stems of trees in shrubberies, nor covering bushes of Hawthorn or similar plants in the ruder parts of pleasure-grounds or parks; nor, in more than two or three places, pruned to a standard of four or five feet high, and developing a large half-drooping head, which almost sweeps the lawn on which the specimen stands. And yet, for each and all of these objects, it is peculiarly well adapted, while its treatment, according to these several plans, would in itself give a great and delightful variety to a pleasure-garden. A short sketch of all these methods may not be unacceptable.

Honeysuckles are not, for the most part, at all suitable for training on walls. They are chiefly twining plants, and require something to wind and cling around. The Etruscan and yellow-flowered kinds, (*Caprifolium Etruscum* and *flavum*), with the evergreen sort, *C. sempervirens*, are, however, tolerably fitted for clothing low walls. But they will need much pruning in such situations, at first, to prevent the lower branches from becoming bare, and to induce them to throw out laterals freely.

For trellises, of various descriptions, Honeysuckles are much more appropriate. They can be trained over these so as to have almost a natural appearance, and whether the trellis be in the form of an espalier, or an arch over a walk, or a covering to an arbour, or any small

erection, they will only need tying to it by some of the main branches, while the other shoots can be wreathed into the trellis. Here, as in the last-named case, much pruning will be wanted for a time, to get the plants into a good lateral and flower-bearing condition. A pretty diversity in training Honeysuckles thus might be obtained by the use of poles, with chains or ropes hanging in a deep curve between them, so as to compose festoons. By fastening two or three main stems along these chains or ropes, and pruning them to give an abundance of laterals, very elegant festoons might be formed in a few years.

Supporting Honeysuckles by poles is much superior to the method of sustaining them by trellises, because more natural, and better calculated to show the plants to advantage. Indeed, this is one of the best of all ways of managing them. The poles may be from six to ten feet high, and either single, or in threes joined together at the top, or in threes kept apart by cross-bars. Perhaps the single poles are most beautiful. A specimen, planted at the base of one of these, may be tied to it, or suffered to twine around it; and as it rises, the leading shoots should now and then be stopped, in order to force them into a lateral growth, for the main beauty of a thing of this sort consists in having the entire pole well clothed with branches and blossoms. If the former are obtained, the latter are nearly sure to follow.

Pruned so as to make a dwarf border shrub, the Honeysuckle will add a very agreeable feature to a shrubbery border. It has only to be efficiently cut down while young, and it will soon acquire the habit of making nothing but short blooming shoots; or, should it occasionally send out a long rambling branch, such as it usually climbs with, this must be cut off at once, and its disposition to produce such shoots will in a very short time be checked. It can then be pruned every winter as an ordinary shrub, taking care to remove straggling shoots in the summer when they appear.

For trailing amongst rock-work, or over a rocky slope, Honeysuckles are exceedingly good ornaments. They have a natural propensity to trail; and if the shoots are here and there plunged beneath a small mass of rock, or merely buried in the soil for a few inches of their length, they will thereby gain fresh vigour, and will not too much conceal the bolder outlines of the rockery. Pruning will be as useful in this case as in the others that we have mentioned; for, by shortening the lateral shoots, they will be induced to grow in clusters, when the display of flowers will necessarily be more effective.

Nothing would make a more beautiful bed or mass on a lawn, or in some retired part of a pleasure-garden, than a group of the late-flowering common Honeysuckle. It should be planted about eighteen inches or two feet apart, treated like a low shrub, as already described under that

head, and, after the plants have gained some size and strength, a few of the more spreading shoots may be allowed to grow into the other plants, and thus an interwoven mass will speedily be created, which will simply require a little pruning and regulating each winter.

What we mean by planting Honeysuckles amongst Ivy is, where Ivy is used for mantling a building, or a ruin, or rocks, or is permitted to overrun a small tree for the sake of picturesqueness, a few Honeysuckles, if trained up amidst it, would greatly improve and diversify its appearance.

The practice of letting Honeysuckles mount the stems of trees in plantations is pursued already in some gardens. It deserves, however, to be more frequently followed. The trees chosen for the purpose should be principally round the outside of shrubberies, because the Honeysuckle will flourish best where it can get air and light. A small number of trees may always be abandoned to such an object, even should the Honeysuckle strangle them, which it will not inevitably do. With care to keep the plants from being blown away from their support, they will not demand other attention.

Every one who has visited old forests, or forest-like woods, must have been pleased with the aspect of Honeysuckles growing over bushes of Hawthorn, the common Sloe, &c., in such places. To obtain these features in the rougher portions of pleasure-grounds and parks, is surely worth attempting; and this may be done by using bushes of the Hawthorn as supports for the Honeysuckle. By planting the latter at the bottom of Hawthorn bushes that are three or four feet in height, it will, if left to itself, give a character of the most picturesque beauty in three or four years.

There is only one other method of treating the Honeysuckle which we shall at present specify, and that is the plan of training it to a standard of from four to six feet high. This is a mode to which we wish to afford some prominence, in connection with a very similar way of managing the common Ivy, which we brought forward in a previous Number. As a companion plant to a standard Ivy, indeed, a standard Honeysuckle would be an extremely desirable object. They are both produced by the same means. Pruning to a single stem, and when this has gained the required height, stopping it, and producing a head of branches, is all the preparation needful; and a trifling subsequent pruning will carry the plants forward without further trouble.

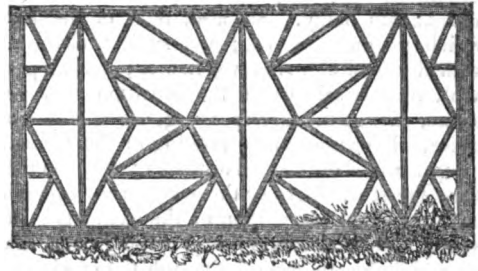
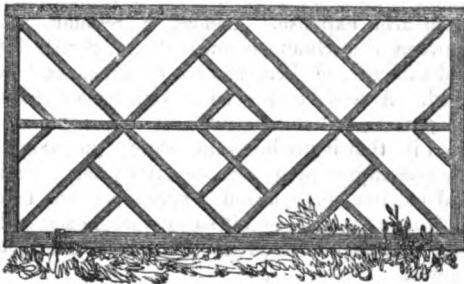
To establish a Honeysuckle as a standard, it should have a stake to uphold the main stem; and as it will be advisable to continue this after the head is formed, lest a strong current of wind should overset and break it, the stake should be an iron one, which will also contribute to neatness. The plant will look best on a lawn, that

is either flat or sloping, and the branches may, when the head is duly formed, be left almost to sweep the grass. If the plant be on a slope, the longest branches ought to be left on the lowest side, as this will create a greater elegance from the valley below.

Perhaps the *C. Periclymenum serotinum*, or the late-flowering variety of the Woodbine, is most to be preferred for a standard. There is little choice necessary, however, as most of the *Caprifoliins* would answer the design, and *C. sempervirens* would probably be especially beautiful.

The plant may be propagated by layers, cuttings, and seed, but the two former, except new varieties are provided for in the saving of seed, are the only means used at the principal nurseries. Layering is a very safe mode, and it is done by taking one of the lower shoots, giving it one twist or a sharp bend under one of the joints,

and pegging it down at that place under ground, three inches under the surface. Do this in one autumn and take it off the next. With respect to cuttings, take them off four joints long, cut the wood away close up to the lower joint, and insert three joints into the ground, leaving the fourth above the surface. This should be done at the same time as the layering; that is autumn, all September and October will do, if the weather be not too hard, it is however better done in September. One of the beauties of this fragrant shrub is that it can be made to hide in a short time any disagreeable objects, or to surmount a wall, or house front, veranda, or arbour, to cover the stump of an old tree, or to run up a stake, and form a head like a standard. The principal thing to mind is that, while the specimen is getting into shape, you may prune, but when you want flower you must not touch it.



GARDEN GATES.

AMONG the various fancies in which the Chinese indulge, that of scarcely having two buildings alike in their gardens may be mentioned as singular; and this is carried out even to fences and gates; but in these there is more simplicity and strength than one would expect to find among persons so fond of show. The examples now given would do as well for English gates as for Chinese; but we take this as one of the proofs, that at one period we copied much from

this singular people, as the tops of our verandas and summer houses of a particular date will show. There are, however, few things in this country in which there is less taste than our fences and gates, if we except those of iron, and these form so small a portion in the country, that they can hardly be taken into the account. Although gates very similar to the sketches now given may be found, they are examples of the present Chinese taste, and hence are curious.

GUANO.

IN collecting together all that can be learned about this now fashionable manure, we propose to offer all that has been, or can be said and written, effectually upon the subject, without wasting the time of the reader with the wild theories and idle speculations of those who draw inferences in drawing rooms from fallacies instead of facts. Maund's Botanic Garden has forestalled us in a

good deal that has been written already, and in proportion to the quantity which that author has drawn from other sources so should we appear copyists. It is better to own, that in this proposed series of papers we shall in the early ones borrow largely from him, for we could not find so good a source elsewhere.

So much as of late been said and written about

this celebrated manure, that inquiries become more and more frequent, regarding its intrinsic qualities, and the methods of best and most profitably employing it. Some use it in a liquid state; some mixed with earthy ingredients; and others apply the pure Guano alone. Some, too, work it into the soil, either generally or partially; others apply it to the surface. Regarding quantity, the practice has been equally variable; Guano having been used from one cwt. on an acre even to ten. These discrepancies puzzle plain practical men, and induce them to neglect that which is worthy of attention. Such circumstances are at present inseparable from the subject; not alone because this is a newly introduced article, but because we are all young in the knowledge of manures in general.

The compounding of various manures together is a subject of much importance; one that has scarcely been thought of, excepting a few of the rudest processes, which have been adopted without the guidance of a single idea as to the effect likely to be produced. It is well known that the drugs of our pharmacopœia greatly assist or ameliorate each other in their effects on the human body. So, also, is it of the food which we ourselves eat; and so it probably is with the food of living vegetables; but at present, in the science of the nutrition of vegetables, men, generally speaking, are merely empirics,—knowing almost nothing of the “mode of operation” of the food of plants; even whether from the atmosphere or the earth, the vegetable collects the greater portion of the elements of its solids. It is, however, a gratifying fact, that rays of light are darting through the crevices of ignorance, and it cannot be doubted but that ere long, although we may not be walking in broad sun-shine, we shall be emancipated from the darkness which has so long invested this department of natural science. Liebig has risen as a star of the first magnitude, and promises, by his light, to guide us on our way to regions of comparative brightness.

Although our intention in this place is chiefly to bring together the leading practical facts which have been elicited by the use of a newly introduced substance as a manure, still we cannot pass over the imaginings which naturally arise on approaching the subject; and these general observations may, we trust, the better prepare some of our readers for carrying into successful practice the experiments of their predecessors; although they may be unable to investigate those laws and processes essential to the development of organic nature.

We shall now bring under notice numerous facts which have arisen out of the use of Guano as manure, and from these draw general conclusions for the guidance of future practice.

Some of our readers may not, however, be aware of the origin of this substance, therefore the history of an article which has now become

so important in commerce, and so useful in rural economy, should be known. The Spanish author, Antonio di Ulloa, published his voyage to South America in 1748, and in 1758 an English translation appeared, in which a clear statement of the benefits enjoyed by the Peruvians from the use of Guano may be seen. These statements seem to have been lost sight of, till the celebrated traveller and naturalist, Von Humboldt, visited South America, and further described its abundance, its qualities, and uses; and from whose account most that we know has been collected.

Its name, Guano, or Huano, in the language of central Peru, signifies manure; and, from the existence of this substance over a certain district of that country, chiefly included between the fifteenth and twentieth degrees of south latitude inclusive, several places have taken their names. Guano is not by any means a newly discovered manure; its uses amongst the Peruvians in the culture of maize and capsicums, on their sandy plains, is traced back five or six hundred years; and without it, cultivation there would seem to be useless,—the land would be a mere arid expanse. Hence, a regular trade between the Guano islands of the South Sea and the coast of Peru has for centuries past existed. A vessel employed in this trade is called a Guanero, and so offensive is the effluvia arising from it, that it produces nausea and sneezing in the passengers of a ship merely sailing near it. Indeed, one small island, expressly called Islan di Guano, is said to emit so intolerable a stench, that vessels are deterred from approaching its shores.

The excavation of mountains of this substance, where it has been found fifty or even sixty feet thick, gave rise to the belief that it was a peculiar sort of earth there deposited—that it was impossible for such an accumulation to have arisen from the droppings of birds; but that such is the fact is beyond doubt. This has given rise to much speculative opinion. It is asked, “has it originated in the same islands where it is now found? or has it been accumulated there by some revolution of the earth?” Does it point back to an era when the deluged globe was provided with a greater number of aquatic birds than at the present time, in the same manner as the coal formation refers us back to a vastly luxuriant vegetation? Or was the Guano formed under circumstances perfectly similar to those now existing; and was nothing required to produce such immense stratification but a long succession of ages? When we look back to the countless years that must have passed away before such accumulations could have taken place, simply by the presence of flamingos and cormorants, it certainly gives rise to unbounded astonishment. One fact, related by Garsilaso, a Spanish author, should be stated. He acknowledges the

importance of Guano to Peru, and says that under the government of those rulers called incas, in the fifteenth century, it was made a crime, punishable by death, to destroy any of the sea-fowl that inhabited the Guano islands. This law has long ago been laid aside; it indicates, however, the estimation in which the substance was held, and also throws a gleam of light on the means of its accumulation.

It may be asked, why the manure from sea-fowl, which abounds in considerable quantities on some of the rocky islands of the north of Britain, may not equal Guano? or why the products of our own pigeon cotes and hen roosts may not be of equal value? Each of these is known to be a powerful stimulant to vegetation, a circumstance which arises mainly from the combination of the solid and liquid excretions of birds; but that which has been exposed on rocks in Europe has its most valuable portions washed away by repeated rains, whereas, in that immediate part of the globe whence Guano is brought it never rains. The manure is deposited stratum on stratum, where it consolidates, dries, and retains all its powerful amoniacal and other ingredients. Again, a wide distinction exists between the excrements of carnivorous and granivorous animals; between that of marine birds, which live on fish, and poultry which live on vegetables. Who amongst us does not know the difference between the offensive gases arising from decaying animal matter, and that of hay or similar vegetables? These gases, which have hitherto been suffered to escape, and are thereby lost, but which it should be the object of the agriculturist to retain—to fix, as it is called, are the very essence of manures, and that which, more than any thing else, is required for the luxuriant growth of agricultural crops.

As Guano is found spread over an immense extent of country, it is likely that it will vary much in quality, from a circumstance already mentioned—that of deterioration by washing. It is found beyond the boundaries of those extremely dry districts in which rain is almost unknown; and when brought to us from a humid and wet climate it will be greatly weakened in its effects. It is also found on low rocks and promontories on the American coast, where sand may drift over it, and be mixed with the genuine manure. These circumstances demand the attention of the purchaser.

We shall forbear to enter on the chemical analysis of Guano; it is more our province to show its effects, and to inform our readers how it may be most efficiently employed in horticulture. We have in progress various experiments to assist in proving its value; and as far as these have gone they have in general been most satisfactory. We have already proved that it may be used too freely, and that injury may be thereby produced. In a liquid state, four ounces to a gallon of water, applied twice a week for three

weeks, to beds of strawberries, it has occasioned an amazing growth of foliage and blossoms, but its influence on the crop of fruit remains to be seen. On the other hand, a bed of seedling alpine strawberry plants, which had been up about a month, was thinly sprinkled with unmixed Guano in powder, and it destroyed every plant where it was applied. The half of a bed of Onions, which were six inches high, were sprinkled over a month ago with pure Guano, at the rate of two ounces to every square yard, being upwards of five cwt. to the acre; the season has been rainy, and the Onions treated with Guano are double the size of those not so treated. Potatoes, which were six inches high, had Guano sprinkled along the rows, amongst their stems, at the rate of an ounce and a half to every yard: and these are now (five weeks subsequently) far superior to those in parts of the rows purposely left without Guano. Nine parts of light soil were mixed with one of Guano, and half a spadeful of the compost was put into each of the holes regularly made to receive it, in a prepared bed of light soil; in the midst of the compost, in each hole, a plant of Brussels Sprouts was put, and then well watered. This was done a month ago, and at the present time, more than half the plants have dwindled and died. Geraniums were watered at intervals of a week, five times only in the whole, with Guano water, four ounces to the gallon of water, their leaves then began to curl, and, although the use of the liquid Guano has been discontinued two months, it is unlikely that the plants will recover till they are potted in fresh soil. Plants of various sorts, in pots, watered only with Guano water, half an ounce to a gallon, have flourished astonishingly—none have failed. These are lessons which cannot be mistaken.

In a pamphlet by Cuthbert W. Johnson, Esq., on Guano as a Fertilizer, which may be referred to by those who are interested in the inquiry, we observe a communication from Henry Bland, Esq., of Liverpool, a late resident of Peru, in which is described the method of using this manure in that country. The practice is, doubtless, founded on experience, and indicates the propriety of applying it sparingly to young plants, and increasing the quantity in proportion to their strength. In allusion to the cultivation of maize, or Indian corn, Mr. Bland says, "when the plants are six or eight inches above ground, a pinch of Guano, as much as can be easily held between the thumb and two fingers, is placed around each bunch, and the whole is usually irrigated immediately afterwards. Guano is again applied when the plant is about throwing out its fruits; a handful is then applied to each bunch, and irrigation immediately follows. The next succeeding crops, potatoes and wheat, are produced without any further application of manure."

From amongst observations and experiments

published by Messrs. Gibbs and Son on Guanos and from private sources, we select the following information. In the growth of Potatoes, two and a half cwt. to the acre, put into the drills, which probably would not be more than an ounce to the yard, its effect was superior to a regular supply of stable manure. Sown on Grass, at the rate of an ounce to the square yard, which, let it be recollected, is in round numbers 300 lbs. to the acre, its effects have been proved to be highly productive. It has been used on Grass land, even to the amount of a ton per acre, and with still increased success. We have not yet discovered the extent to which it may be applied to Grass land without its becoming injurious from excess of quantity. Whenever Guano is intended to be spread broadcast over land, it will be necessary to take some means for effecting its regularity. For the present, however, we have done, but we shall resume the subject.

CULTURE OF THE POTATO.

OUR correspondent has just made us acquainted with the following method of planting and preserving potatoes, which has been practised with much success in the neighbourhood of Weston-super-Mare:—

Plough a field in ridges, as if for planting teazles or sowing wheat; or dig a bed of any length, four feet wide, and a foot and a half deep, scatter moist manure over the whole, and place four sound potatoes of middle size across the bed in rows two feet apart; whole potatoes are better than sets, as the toughness of their rinds and their substance secure them from the dry and wet rot, and from insects.

Earth taken from the alleys should then be spread as fine and loose as possible on the bed to the depth of three inches only; more earth to the depth of three inches must be added after a very heavy fall of rain, *to secure all moisture*. If this second covering be given just as the plants are breaking ground, it will protect them greatly for a time, and strengthen the roots in case of frost, and radishes may then be sown to come off in due time; or, after the plants are four or five inches high, the ground may be spitted to the depth of two inches only, that the roots may not be injured, and the earth may be spread evenly between the rows, and rendered as fine as possible with the spade: this flat earthing must be preferable to the usual banking-up system, as that diverts the rain from the roots, and leaves some of them uncovered. The bed may be a little higher at the sides and ends than in the centre, that not a drop of rain may fall off; when the blossom buds appear, probably all the stems have grown to their full length; they should therefore be cut down to within a foot and a half of the ground, to stop and force down the sap to quicken the growth, and con-

sequently the ripening of the young Potatoes; and the weeds should be Dutch-hoed once by a person standing in the alley.

Thus if an over-dry season should succeed, the roots will receive sufficient moisture; the loose flat surface will imbibe every drop of rain, and give space for the growth of the young Potatoes; if an over-wet season follow, the alleys and the loose earth below the roots will receive and absorb the superfluous moisture.

The Early Manby, (not Manly,) the London Dwarfs, and the American Snow Drops, should be planted in December or January, and must have one covering only of earth four inches deep, taken from the alleys, and immediately afterwards more earth taken from the alleys should be raised on the sides and ends of the bed six inches high, as slight banks to support three or four hurdles having reed straw, such as thatchers use, or any other article securely fixed with strong twine on one side of each hurdle; salmon coloured radishes may be sown and covered with finely sifted earth and wood or coal ashes. The hurdles must remain on the bed every night, and be lifted every day in suitable weather to admit air, light, and rain, and be retained when necessary, to exclude a superfluity of moisture as well as frost. The plants will probably be six inches high by the middle of April, when the hurdles must be propped up higher, should there then be frosty weather, or wholly removed; and should an occasional frosty night intervene, the icicles must be brushed off with a heath, rush, or other very light broom, or washed off with a garden engine or large watering pot. The crop will be thoroughly ripe on or before the 1st of June, and may be disposed of without reserving any for seed; for as soon as any of the new Potatoes are dug up, the roots must be instantaneously planted in a prepared bed close at hand, and well moistened with liquid manure or pure water. This new plantation will produce a crop in October superior to the first crop in size, quantity, and quality; and these roots may also be immediately planted, and afterwards protected by hurdles for the following spring crop; the hurdles will, with care, last some years, and may be propped up over nursery and flower beds as shades from a scorching sun. To succeed the first crop, the Marsh Champions, the true Huntspill Dwarfs, called Silver Skins, and the Cornish, Sharp Nose, and Cheddar Kidneys, may be planted on the 1st of March, to have two coverings of earth as before stated; and branches of ivy or other evergreens should be placed between the rows and over the plants to protect them from harsh winds and frost; and the Yorkshire Kidneys, Phillips's (Vauxhall Road) Seedlings, the Scotch Reds, &c., may be planted in the middle of April, during showery weather, for the main crop.

PRESERVING POTATOES.—Let Potatoes be dug up on a fine day when thoroughly ripe

and dry, and let the haulm, straw, or dry waste hay, be placed on the highest part of the field or garden, on which the Potatoes are to be heaped, and let the heap be covered with dry straw, haulm, or hay; a trench must then be dug around it, and the earth therefrom thrown on the hay or straw, which ought to be thatched in such a manner that the droppings from rain may fall into the trench; this mode must be preferable to pitting, which causes the dampness of the earth to rise, and consequently the premature sprouting of the Potatoes. Or if the Potatoes are to be preserved in an outhouse, it should be considered that stone or wooden walls not exposed to the sun or fire, attract and retain dampness, and as moisture is transformed into icicles by the action of frost, so it becomes necessary to place dry straw, sand, refuse hay, haulm of any kind, or pieces of turf, between the walls and the Potatoes, as the former would impart the dampness or the frost to the latter by the contact; also, should the floor be earthen, it must be covered two feet thick with dry sand, or straw, or any other dry article, as a protection from dampness.—B. [*Early Vol. of the Gardeners' Gazette.*]

THE LOUDON TESTIMONIAL.

WE were quite certain that we had only to mention this subject to secure a prompt and effective co-operation among all classes of gardeners, and that all persons would be willing to lay aside their differences of opinion, and forget all they disapproved of in the writings of Mr. Loudon, in their readiness to acknowledge the service he has rendered by his voluminous works on Horticulture. This has not been met by a corresponding spirit. An advertisement, of which the following is a copy, has been inserted by Mr. Loudon in the daily papers.

LOUDON TESTAMONIAL.—An advertisement having appeared in the *Times* of the 26th of September, and the *Gardeners' Gazette* of the 30th of September, with this heading, MR. LOUDON, who did not return from the country till the evening of the 30th of September, and did not see the above papers till the following day, now takes this mode of acquainting the public, that he not only DID NOT SANCTION the above-mentioned ADVERTISEMENTS, but that nothing would induce him to accept the Testimonial to which they allude.

Bayswater, Oct. 2.

J. C. L.

The most extraordinary feature in the affair is the slur which this advertisement casts upon public testimonials. That presented to Mr. Neal in Scotland, and which did all those who contributed to it so much credit, is an example which justified us in calling attention to the subject of a similar acknowledgement to Mr. Loudon, and the proposal that we should be

first to mention it, came from friends in Scotland, who would have done by Mr. Loudon as they had done, and had seen done by another worthy labourer in the cause of Horticulture. The inference to be drawn from this advertisement is that a person intended to be honoured, should be consulted on the subject, and that such matters as public testimonials to public characters should be *got up* and *managed* in a peculiar way; that is to say, the individual ought to be *a party to it* and *sanction it*. In short, that although such things are supposed to be the spontaneous offerings of those who contribute, they should be managed under the sanction of the only person whom the world thinks knows nothing about it. The subscription had commenced without the knowledge of Mr. Loudon; those who commenced it in several places from which we have received accounts, believed that it would be quite time enough to consult Mr. Loudon when they had done their duty; and that the only object of such consultation would have been to know the most agreeable form in which it should be carried out. We hope, notwithstanding the implication thrown out by the advertisement to the contrary, that public testimonials are for the most part more honest and more genuine than anything can be in which the person to be honoured is *at the bottom of the affair*. The Gardeners and Amateurs who have subscribed can see by what has been done, how much can be achieved by small subscriptions, and when there shall be occasion for it, they will be equally ready to contribute for any other good purpose. We regret we have been the cause of much trouble in many places, by awakening sympathies so creditable to the numerous subscribers, and so abruptly suppressed. Our object was a good one, we went about in the best way we knew how; we answered the requisition of our northern brethren promptly, and as it would seem from many provincial letters, effectually; and although the movement, as the French people call it, was ungraciously checked, we feel quite satisfied that when it is attempted with *Mr. Loudon's sanction*, those who have contributed, and others who would have contributed on the present occasion, will be equally ready to show their respect, without questioning the source whence the proposal may emanate, or who is at the bottom of it.

FLORAL NOTES.

ONE of the leading properties of the Fuchsia is to have the sepals reflex, and the more we look to the brightness of the inside as compared with the outside, the more convinced will a common observer be of our correctness. Another, is to have the sepals and corolla as distinct and as much contrasted in colour as possible. A third is to have the corolla large and compact like a roll of velvet, and not as in many cases, ragged and

spread. Another, is to have the sepals broad, which makes it form a globe, after the fashion of *Globosa*. We do not condemn every thing that does not come up to our standard, but we are slow to praise when the fact of our praising would be taxing every grower with the price of a plant. There must be something extraordinarily fine in the habit of a plant to make a self-coloured *Fuchsia* good.

THE DAHLIA.—It would seem from the construction of this flower that the entire perfection, as laid down in *The Gardener*, is not to be looked for, that a sunk eye and a cupped petal are almost inseparable, and that the happy medium produces a better general bloom than when three or four points are to be had in perfection, and the other very bad. Thus reflexed flowers are nearly always rather better in form than cupped ones. Take for instance Holmes's *Exquisite*, the petal is not first-rate, and it reflexes; yet a perfect bloom of this, such as we have seen a hundred times, has the principal five properties in greater equality of perfection than any other variety extant. It is round outside, forms two-thirds of a ball in front, is symmetrical, double, and well up in the eye. But reflexed petals, however well they conform to the general properties, are not so bright as cupped ones, whether it is the reflection of the light, or what it is that gives the brilliancy, we know not; but, all cupped flowers are more or less sunk in the eye, and it arises from the circumstance of the petals lifting up as they open, and the unbloomed centre remaining close down in the centre, while the reflexed petals turn back, and grow lower than the bunch from which they have parted, and which in their unbloomed state form the best possible centre.

The **POLYANTHUS** is an instance of a scalloped edged flower, and should, as we are told in the *GARDENER*, be as little indented as possible. It has been asked why this flower should not be circular, as the circle seems to be demanded as the perfection of all others. The reason should be obvious. The *Polyanthus*, has its corolla divided from the edge to the eye into five or six, and each of these divisions are heart-shaped. Were this all, we should soon cry out for the circle; but there is a narrow lacing, not only round every division to the eye, but the lacing also goes down the centre of each, so as to divide each division by a yellow stripe, which matches the stripe on the side of each division. This was a character which so totally distinguished it from the *auricula*, that it was desirable to preserve it; the flower is therefore composed of a tube, like the *auricula*, an eye of yellow which surrounds it, and is perfectly circular; and then comes the dark colour and yellow lacing, which forms so many loops of gold all round the eye. But had not there been this gold stripe down the centre of each division, we should almost doubt whether the floricultural lawgiver would

not have been warranted in getting rid of the indentures altogether, as in the case of the *auricula*.

PHLOXES.—These were the most extraordinary instances of change that has ever taken place; for there is no difficulty in selecting varieties now, with flowers as round and as flat as a shilling, although, when it was said that the blooms ought to be circular, the principal varieties, were mere windmills, and, strange as it may seem to those who do not try, every pinch of seed of any flower will bring so many degrees of size, and so many varieties of shape, that when a standard is once fixed, you can always find some that approach it nearer than others; it is only where there is no fixed standard, and common sense does not lay one down for us, that we are floundering about without improving.

TULIPS have often rotted in the earth, though they have in many cases thrown up the spike of green above the surface, and a correspondent asks us the cause. Now, as this may arise from many different causes, it is somewhat difficult to attribute it to any one in particular. We must call in the aid of a few *IFS* and *BUTS* after the fashion of our betters, who give opinions on law cases. To commence. If before planting, the taps had thrown out their small fibres, and these had been bruised, or turned mouldy from damp, the destruction of the bulb follows as almost a matter of course, and yet the moisture in the bulb would assist Nature in her last struggle, and the spike would for a time continue to grow. In such a case, if the spike were pulled up it would leave the bulb in the ground, and the bulb would be found soft and rotten at the bottom. We have seen this occur in several instances, and in one where fifty rows hardly bloomed twenty flowers: there is at least a similarity in the symptoms. Again, if sand were used under each bulb, which is very often the case in the best beds, and if this sand contained any salt, the effect would be the same to all outward appearance. But in the first instance, offsets would be found on taking up the roots, because all incipient offsets are much later in throwing out their fibres than the main roots are, and therefore many would escape the damage from bruising or damping; while in the salt affair, the moment the fibres pushed, the salt would accomplish its mischief; therefore offsets would only push to perish.

The **PANSY** would appear to be somewhat neglected, and we have no doubt it arises from a circumstance of which the growers themselves seem hardly cognizant—the want of novelty among their seedlings; and so long as they take their seed from flowers within reach of the general collection, they may raise ten thousand without finding a good one. Let them select a few of the best, and plant as far off as they can, and save seed from only such blooms as are well marked, and not more than two or three pods from one plant,—they will tell another tale.

GLENNY'S GARDEN PRACTICE.

It will, perhaps, appear to many persons, before the year's practice is completed, that I have many unnecessary repetitions; and I have no doubt that I took more trouble to repeat the same kind of operations, month after month, and week after week, than any of the present gardening books warrant, or any professional gardener would recommend; but I prefer this to having enough and to waste at one time, and none at another. How often has the reader found his Turnips all ready at once when he has been unable to use a quarter of them, and been totally without at another time, when his neighbour abounded with them. This comes of sowing general crops too large, instead of making several sowings. I prefer sowing a thing ten times, and losing the first and last, to foregoing the chance of an early crop, and a long continuance. It is only those subjects which ripen, and are stored, that ought to be sown or planted in very large quantities. Onions, Potatoes, Carrots, and such like, require to be sown in sufficient quantity to be used through the season, and stored through the winter, and, therefore, besides small sowings or plantings, there is a main crop to attend. Nobody eats a large quantity of broad Beans, and many hardly require a dish all the summer. If I, therefore, give directions for a sowing this present month of November, I take it for granted, that those who do not care about having them early will do nothing of the kind, while others who care not how soon they can gather a dish, will do as I did myself, and as I recommend others to do. The same thing will occur every time I repeat the directions. But there is a little caution to be used in these matters. Suppose you really would like a dish of Beans as soon as you can grow them, it does not follow that you are to put enough in, to last all the season. Your proposed consumption must be considered; a row may be enough for a dish, and if you plant a dozen rows instead of two every time you are told to sow them, you will fill your garden full of a crop which is worse than useless. It is by carefully attending to the probable quantity you want at one time that you can alone render your garden useful and profitable; a row or two at a time of many things is better than depending on a quantity, and whether it be Peas, Spinach, Beans, Lettuces, Cabbages, Turnips, or other crops, it is wise to have successional sowings and plantings; my repetitions, therefore, will be perfectly reconcilable to the reader, if he attends to them only according to his wants or wishes.

NOVEMBER.

KITCHEN GARDEN.

BEANS.—If not sown last month may be sown now, either in two or three rows, as pre-

viously directed, or in a patch in some sheltered place, or where shelter may be given. This may be done to succeed the other, if any were sown last month. If in rows, they must be in a warm dry situation, and not under the shade of trees. As to the kind which will stand the best, consult your seedsman. There is a kind that was raised by Marshall of Kingston which never failed to produce good crops, and it was a small, prolific, and well flavoured kind; I believe it is called Marshall's, but there may be others equally good, and many prefer Magazans to any thing for sowing through the winter. As soon as Beans are up in rows you should draw the earth up to protect the stems, and on the cold side you may hoe up a complete miniature bank to shield them from the north-east winds.

PEAS.—Sow to succeed those of last month, Groom's Dwarf, or the early Hotspur, indeed any early kind will do perhaps. The first is the best and most convenient, and being close to the ground, it is much easier preserved from the weather. Sow as directed last month; but keep in mind that you should not sow too many at a time.

For those desirous of very early Peas, a plan may be adopted, at no great expense, and with great advantage; make boxes, four inches wide at bottom, and three at top, and from eighteen inches to two feet long; let the bottom be loose, and tack it in temporarily; half fill with light earth; sow the Peas in a single row, along the centre, and three inches apart; fill up, and keep them in the greenhouse, cold frame, or stove, according as they may be required. These may be grown, almost to blooming, and be planted out, without the least check, by simply loosening the bottom, clearing out a level trench, placing the box, without its bottom, thereon, and tapping the sides, which, as they taper upwards, will lift off, and leave the cake of earth and roots entire, the Peas being easily put through the top, and the row adjusted thus to any length; earth up level, or rather above the surface; press close, and water freely. Now is a good season to plant for this purpose. The convenience is, in being able to put away a great quantity in a small space.

Another way, still more simple, is, to get some turfs cut six inches wide, and three or four inches thick, in lengths of two feet or eighteen inches, turn these wrong side upwards, laying the grass or under side upon a flat surface, sow the Peas an inch apart all down the centre, and let them grow under cover till they are on the eve of blooming, when the strips may be laid in the trenches cut on purpose. Groom's Dwarf, or some early dwarf kind, are best for this purpose.

SEA KALE.—Cover up with earth if it is not

to be forced; let the earthing be six or eight inches above the crown. It will be found, when it reaches the top in the season, far superior in flavour to any that is covered with ashes or other rubbish, and quite as fine.

Acres of this beautiful vegetable are now grown in worked up ridges, like Asparagus, but only one row in a ridge.

For forcing, you will find that a good supply of hot dung, all over the portion you wish to force, will produce better samples than pots, though the growth will not be so rapid.

In earthing it up, there need not be more than six inches of soil on each side of the root, so that the banks, as it were, would be from fifteen to eighteen inches wide at the bottom, and twelve inches at the top, forming square topped banks, and trenches between them. I have forced the Kale repeatedly by only well covering a space with stable dung, and although, perhaps, a great waste of heat, the superiority of the Kale which grows in the solid earth, over that which has its surface exposed within a pot, or which comes through coal ashes, is very striking.

RADISHES.—If you desire any, sow a few where you can readily cover them with litter if they come up. There is not much dependence on their doing well, but there is a good chance. Those who have frames, and like to sow a few under a glass, will have more dependence on them, but I think them not worth much trouble. The short topped are the best for this season.

SALADS, as directed for last month—that is, if you value winter salads enough to take the trouble. Most private families are content with Beet, Cellery, Endive, and corn Salad, which may be had pretty nearly through the winter without difficulty, but with a spare frame or two, Lettuce may be added, and small Salad can be raised from week to week, according to the required supply.

LETTUCES, which form an important feature in salads, beyond those we have described, suggest nothing beyond the directions given for last month. Those in frames or under glasses must have plenty of air in mild weather.

ENDIVE may be destroyed by violent frosts at any time, therefore it is not a bad plan to take up some of the strongest plants for a few weeks' supply, if you have as many. On a dry warm day tie them up close, as you would a Lettuce for bleaching. You may then plant the roots in a box or basket of soil, under cover, say in an outhouse, or under the stage of a greenhouse, or in a frame, they will soon blanch, and be good for a considerable time, even when the frost may have destroyed all the rest of the crop.

CELERY merely requires to be earthed up on dry days as fast as it grows, and as high as it will bear it, to protect it from frost, as well as to blanch it.

CABBAGES &c.—Plant out a few more of the strongest from the seed bed, the same as advised last month; be guided a little by the supply you require; but it is an excellent vegetable, and with a very small growth, the plants make exceedingly good greens, while by pulling some up, so as to leave plants in at equal distances, they will advance to Cabbages at the proper season.

ASPARAGUS.—If you have not attended to last month's directions, do so now, and if you want forced asparagus, or, having provided for some, a succession of forced, the operations mentioned last month must be done or repeated as the case may be.

ARTICHOKES and **CARDOONS** having long been banished my garden, because I thought them not worth using, even if well grown, I shall say little about them, except, that they require earthing up almost as high as Cellery, to keep them from the frost, and that they occupy a good deal of valuable space that could not be worse employed.

CAULIFLOWERS.—Give air in mild weather, but if it be wet, do not take the glasses off, but tilt them, for the wet must not get to the plants, this applies equally to those under bell glasses out of doors, those in frames, and any that may be under hand-glasses, as suggested last month.

SPINACH.—Take only the outside leaves of this, as you want it for use, the leaves, as they grow, form the supply, the same plants will yield ten times over, if they are carefully managed; keep them clear from weeds.

CARROTS, PARSNIPS, BEETROOTS, &c.—If the Carrots were not stored last month, it is running a risk of their spoiling, and no time should be lost. Parsnips may remain in the ground, but it might be difficult to dig them up in a frost; some should be taken up to keep handy, and the Beetroot ought to be taken up and stored without delay. Sow a small quantity of Carrot seed in a warm border, for the chance of a few in the spring.

POTATOES.—If there be any of the late ones out, lose no time in getting them up, and stored within a dry cellar, store house, or in pits, as suggested last month.

ONIONS.—The winter onions require weeding very carefully by hand, as soon as weeds appear, and some of the strongest may be drawn when required, to thin the remainder, and be useful in sallads. Those in store should be examined occasionally, and soft or decayed ones taken away, they ought to be kept in a cool dry place; damp or warmth will make them grow or rot them. In using them always pick out those which incline to softness or shrivelling.

GENERAL MANAGEMENT.—Clear off the remains of exhausted crops. If there be any piece of cut cabbages it may be worth while to remove the stumps into close quarters, in some

vacant part of the garden, planted almost as close as they will stand, they will yield sprouts, sometimes winter greens are very scarce: where these are removed from, as well as all other vacant spaces, when crops have come off, you should dung and dig in, leaving the surface rough, or in ridges, that if it remain empty, the frost may sweeten it, and it will at all events be ready for any crop you may want to get in. Take care also to remove weeds from ground that is otherwise vacant, as carefully as if it had the most tender and valuable crop. Look well to the directions of last month.

FRUIT GARDEN.

PRUNING STANDARD TREES.—This is an operation almost universally neglected, and many an old tree which is filled with twigs like brushwood, and yields fruit half the proper size, and but little of it, might be renovated in a great measure, by judiciously cutting out some of the worst of its branches that cross the others; taking from those branches which are left, all the smallest of the miserable twigs, and leaving only the strongest shoots: and these might in many cases be shortened with advantage. The trees should be opened a good deal to allow sun and air to the branches, a thing impossible, when they are allowed to thicken into brushwood. Almost any clumsy pruning that would thin the heads out, would be better than none, and nine times out of ten, by only consulting the form and fashion of a tree, and improving its shape, you would be improving its bearing and the fruit. When branches straggle and are near the ground they might be cut off, it would be clearing away the shading from the under crops, lightening the ground, and giving air to whatever was beneath it; besides it would greatly improve the appearance of the ground to any body that walked in it. When this is done, the next step should be to see if any of the branches cross each other in the head of the tree, also where branches were too close and run together, and cut out some of the worst: then, lastly, remove all the small brushwood and weakly twigs, which may sometimes be found too close to be of the least use, take most of these clean 'off and let none be nearer than a foot to each other.

PRUNE WALL TREES.—Peach, Nectarine, and Apricot Trees should have the best of the last summer's shoots laid on the wall at equal distances from one another, that there may be room for the fruit, and all the weakest cut away to make room for the stronger, but you must keep in mind, that for the fruit, you depend a good deal on the last summer's growth of wood, and, therefore, that it must not be wantonly cut away when you can find room for it on the wall. If you find the old branches in your way, or that the young wood during the

summer has been awkwardly placed, unnailed as much as you think proper, and nail it up again more regularly, and if you find any of the old branches bare of young wood, and that you could fill up the space pretty equally without it, cut a whole branch away. If, as is sometimes the case, you find long vigorous shoots without lateral branches, shorten them to half the length, or to three or four eyes, and generally shorten the longest shoots a little, say one third or one fourth, so that you leave some of the fruit buds, which are generally more numerous towards the end. Having pruned them, lay all the loose branches carefully on the wall, and nail them at equal distances by putting a shred of cloth or list round the branch, and driving a nail through both ends of the shred, as close to the branch as you can.

PLUM, PEAR, APPLE, &c., have to be regulated on the wall as equally as possible, but the young branches must not be shortened while you have room on the walls for them to grow. The fruit of these come on short spurs all along the branches when they are matured, therefore the pruning and nailing is chiefly restricted to cutting out damaged or decayed branches, and of so nailing the others as to make them equidistant on the wall.

The VINE may be trained and pruned several ways; the simplest, however, is the best, for the lateral shoots all along a Vine may be cut down to two eyes, which will be found at the same joint, and the spur so left will give you a bunch of grapes. Some persons lay the entire length of a shoot where it is wanted to reach, as, for instance, the end of a rafter in a greenhouse, or the space it is to occupy on a wall, or front of a house, and stopping it at the end, they constantly do no more than cut all the lateral branches back to the lower joint; every now and then, allowing a strong branch of new wood that will go the length, to be stopped at the same place, and to take the place of the old branch. I have renewed the branch on a rafter frequently in this way, and changed it the whole length, but it was when I could only have one branch to each rafter for bearing, and one nursing, to take its place when I wished to change it. The Grapes are always on young wood, and so that there be but one joint left of the last summer's growth, from that joint will, if it break properly, come a branch with its fruit. The great object is, then, to save strong wood, to be trained in different directions, until you have filled the space required, and all that time to remove weak shoots; then lateral shoots may be cut in all the way along every branch, forming short spurs. Whenever, however, a vigorous shoot comes out stronger than usual, it may be saved to take the place of the branch it comes from, or be laid in as an additional one, but I speak only of extremely vigorously growing shoots, which, in fact, deprive all beyond

them of any nourishment. Another plan is, to select the strongest shoots all the way along the branches, shorten them to three or four eyes, cutting out weak shoots only, and a superabundance of the strong when they are too close, always bearing in mind, that you keep the wall or front of house, or other situation, well filled; but it is very easy to give a Vine too much to do, notwithstanding the new doctrine which one of your celebrated theorists has mooted in behalf of keeping all the leaves and branches on a fruit tree. The amateur gardener is a good deal more apt to be too sparing than too severe with his knife, and it is a pity, because, where there has been severe pruning, if they have but kept one joint of young wood spur fashion, the bunches have been less in number, but far larger and finer. It is curious to see how many systems of pruning are adopted by different successful cultivators, and so long as they save strong young shoots, and get rid of old and weak ones, it seems to matter little how the thing is contrived. I have observed some placing the branches of the Vine serpentine fashion, others horizontally, but so that there is good nourishment at the root, and the space is well covered, the fashion of the training has little to do with the quantity or quality of the Grapes. If, therefore, you have an old Vine, crowded and confused, take your knife in hand, and begin by examining which of the branches have the best last year's shoots upon them, that is to say, the thickest and longest; these must be taken care of; cut out any of the old branches which have very few and thin shoots upon them—this will give you room; next cut in the other shoots of last year to four or five joints, and where these are nearer than a foot apart cut some right away, so that the strongest of the young wood may be left with three or four joints, not less than a foot apart, but a weak shoot will do more harm than good. The whole business of training and pruning the Vine may be summed up thus:—give the branches room, cut any new wood, (even if you want to fill a house or a wall, and the shoots reached all the way the first season) to half its length, and let the end shoot fill it up for you the next year. Cut all weak lateral shoots away altogether, and strong ones (unless you want to fill up a space) to four or five eyes, or less, renew the branches about every four years, where you can get new strong branches to do it with, and nail it firmly to the wall, or fasten it to the place which is to hold it, so spread or distributed, as it were, that the branches will not be in each other's way.

PRUNING GOOSEBERRY AND CURRANT TREES.—Where you are going to crop the ground, and do not want to disturb the place again till gathering time, you may prune Gooseberry and Currant trees, but I prefer doing it in January. In pruning Gooseberry bushes, give every branch good room, and cut out any that cross

or crowd each other. Where they ramble too much, shorten them to a good shoot, so that it may take the lead, instead of the end removed. Cut out from each branch such lateral shoots as cross, or crowd others, and all weak lateral shoots, leaving, however, three or four, or more, at a good distance apart, the whole length of the branch. Remove all the spawn or suckers that may come from the root. Do not shorten any of the lateral shoots that are left on, unless they are in the way. The Currant is to be similarly treated in most respects, except that, instead of cutting the shoots to be removed quite close, you may leave them an inch longer in the branch, and each year old spurs may be cut away, and new ones left. Three or four lateral shoots are the most that should be left on a branch of a moderate sized bush; and care must be taken to cut away old and decayed, or barren branches, and leave young strong wood to supply the place.

BLACK CURRANT BUSHES require very little pruning—they ought to have nothing taken away but very weak lateral shoots, and such as are absolutely in the way, and the leader of each branch should by no means be shortened.

PLANTING CURRANT AND GOOSEBERRY TREES.—Although this may be done almost any time, from now until February, the sooner it is done the sooner you are free to do other things. It has happened before now, that the work which was put off for a man's own idleness, or because it would do later, has been protracted by inclement weather when the proper time came, and the plants have suffered. The ground in which Currants and Gooseberries are to be planted should be stiff and rich. A field of good loam, fresh broken up, would, if well dunged, be the very best they could have. If the garden, therefore, be what is called worn out, but which often means has never been properly trenched nor drained, do both these in the first instance, and if the soil, as it often will, turns up well from the bottom, merely put a barrow load of good dung to each tree, digging it in, and well incorporating it for two feet wide, and eighteen inches deep; then plant your trees, first pruning all the ragged ends of the root smooth, and shortening the straggling parts of it, and then making a hole deep enough only to let the root down as far as it had been grown before, and no deeper. Take especial care that the earth be shaken or pressed in between the roots, that it may be trodden down solid. How and where they are planted must be a matter of taste. It is a good plan to have rows here and there to part the quarters or compartments of a garden, in which case they should be six feet apart in the row. If they are to form a compartment by themselves, they should be eight feet from row to row. In small gardens three or four of each would be as many as could be got in.

STANDARD CURRANT AND GOOSEBERRIES.—I can see no good reason why Gooseberry and Currant trees should be allowed to occupy so much of the ground room as they do, and why they should not be grown as standards on a single stem as high as they may be required. If the heads of these trees were a few feet from the ground, how much room would be saved? Why the entire width of the path on each side, for as the stem would occupy no more room than a piece of stick, even when the heads were three, or four feet across, a row would not occupy more than a yard in width. Whereas, if the three or four feet of bush were close to the ground there would be a path of eighteen inches occupied on each side all the gathering time, which if they are properly gathered would be some weeks. To make these standards, tie up a main stem, which should be the strongest that a cutting makes, and remove all shoots from each side of it, and continue this until it is as tall as you wish it to be, and four eyes above it. This in Currants should be two to four feet, because the under part of a Currant tree is smallest, and it spreads out as it rises fan like; but in a Gooseberry it should be four to six feet, because that droops and spreads below like an umbrella, let the top be taken off, and the three or four eyes immediately under it grow, all below them must be rubbed off the instant they push, not only when the top is taken off, but all the while it is growing from the cutting. These four shoots may be shortened to three eyes each at the end of the first season of their growth, and the next year they will throw out enough branches to form the head, and enable you to cut out some of them that are too close, the head would require to be treated the same as a bush. But whether people have patience to make a standard high enough to stand under or not, it is quite certain that if they were on stems a foot high the ground would be less encumbered, and more easily hoed, the fruit would be cleaner as the rain could not splash up the dirt to it, and they would be more free from ground vermin, as the stems could easily be fortified against their approach.

RASPBERRY CANES die down to their roots every year, as soon as they have performed their office, but during the summer the roots send up suckers to succeed them. These are now full grown, the old plants may be cut down close to the ground, and also such of the new suckers as are weakly or weakest, reserving not more than four of the strongest on each root at the most, and shortening these one fourth of their length. These should be tied to a stake, but they may be merely twisted together to hold one another up and tied together at the top. New plantations of Raspberries may be made now, prepare the ground as for Currants; Raspberries may be planted three feet apart in the rows, and if together in one quarter of the garden, the

rows must be six feet distance from each other. But even these do well in rows to part the different quarters of a garden. When canes are first purchased, each is mostly only a single cane with a root to it; they may be cut to half their length the first year, and be planted in the same way as Currants and Gooseberries. The second or third year, they will get strong and throw up vigorous canes, but they will not do much the first season.

NEWLY PLANTED TREES must be always secured from being moved about by the wind, or they will fail by reason of the roots being disturbed and left hollow, besides the finer portions being certain to suffer fractures. When trees are large there must be three stakes all pointing towards the tree, and well fastened to it as well as to each other. In cases of smaller things a single stake may be enough.

Dig between the rows of Currants, Gooseberries, and Raspberries, and well dress the ground as close up to the roots as you can go without disturbing them.

STRAWBERRIES.—Clean the beds from stray runners, weeds, and dead leaves, hoe between them to loosen the soil, and put on a good dressing of well rotten dung, dig the alleys and generally clear away weeds and rubbish, and carry off the ground. If any of the plants in the beds made in September shall have missed, have them mended with good strong runners or plants now. Any choice runners may be planted in beds, and if you have potted plants well established to turn out, you may even make new beds this month, but the sooner the better. In doing this you must prepare the ground as for Currants and Gooseberries, and plant the Strawberries with a trowel, making a hole deep enough to take the ball of earth as it leaves the pot whole.

MULBERRY, WALNUT, CHESNUT, FILBERT, MEDLARS, and all other fruit trees, require the same plan of planting, only that due regard must be had to the size a tree grows. They all want the ground prepared for them as directed last month, they all require the same care, the same support after planting, and in all other respects the same treatment as to their roots being placed solidly in the ground, and the earth trodden firmly about them.

GOOSEBERRIES TO PLANT.

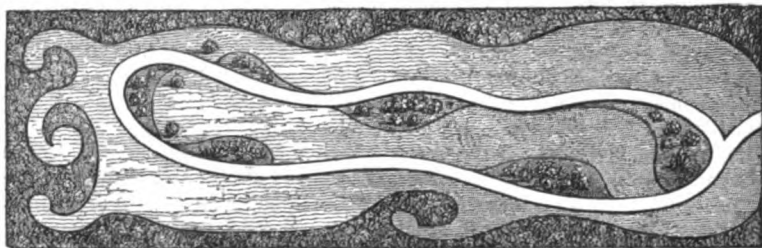
Warrington, Leader, Rockwood, Comparison, Top Sawyer, Lion, Eagle, Providence, Peacock, Whitesmith, Yellow Champagne, and Wilnot's Early Red. But if the garden be a small one, there is nothing in flavour to beat the Warrington.

CURRANTS TO PLANT.

Large Red and White Dutch.

RASPBERRIES TO PLANT.

Large red Antwerp, large yellow Antwerp, twice bearing white, twice bearing red.



FLOWER GARDEN.

LAST month, particular features to be observed in making a new garden or relaying out an old one, were numbered as necessary for effect. The above is a sketch rough enough perhaps, and ugly enough, as all long strips of garden will be, when you have done your best. Yet, there are thousands of such strips to good houses, and when you want a little taste displayed, have very little room to do it in, and moreover, do not want to be always digging and planting and changing crops, you cannot do better than adopt some such plan. The clumps and outer border being planted with choice evergreen shrubs, with a few deciduous flowering plants intermixed, not in sufficient quantity to disturb the evergreen features, and enough room left in the front of them to hold a few flowers; the effect is a thousand times better than square patches of grass, straight gravel walks, and flower beds. All the main portion is to be laid down with green turf. The main walk merely gravelled, and the comfort of having a garden, however small, always green, is great, for it never need be out of order an hour. A man for a trifle will keep the grass always mowed short, and by keeping in the borders of the clumps those flowers which bloom nearly all the summer such as Verbenas, Scarlet-geraniums, Petunias, Nemophyllas, Heliotropes, Fuchsias, and others which will be named in their season of planting as clump plants, with a few Dahlias and Hollyhocks, among the higher shrubs a great trouble will be saved, and a brilliant appearance will be kept up. But there is another kind of garden, especially for flowers, and which might be made at one end of a slip of ground like the one here treated of. The geometrical or Dutch flower garden. This is laid out in a very fanciful description of figure, of which the stars that boys draw with compasses will give a good idea. In these gardens the gravel walks are made not more than two feet wide, crossing each other in lines, or circles, or ovals, leaving beds of all kinds of shapes and in great number; of this, however, which may be made any time between this and March, there will be more said next month. The figure at

the head of this article would have been better if shortened one whole square, and this square left for a Dutch garden it is, however, given, that people may see what can be done with the innumerable long strips of garden, enclosed by the boundary fences or walls, which part the gardens of rows of houses, and how much better it is to have them laid out in something like a picturesque fashion: planting out the walls and fences with an irregular belt of evergreens, and concealing the real size of the place with apparent openings, which however only lead a yard or two to a terminus with a seat or statue, or summer-house, though to the casual passer by it might as well lead to a park or another part of the garden.

CLUMPS formed in gardens of this description, or BEDS formed in the more uniform dispositions of gravel and mould without grass, should be made up according to the subjects to be grown in them. Where the more delicate kind of American plants are to be cultivated, there should be a mixture of peat with the ordinary loam from a meadow and leaf mould. If it be for shrubs of more sure growth, loam, dung, and leaf mould are proper, and either will do for flowers; but, always presuming that the garden is well drained, the earth in a clump should be dug out, at least eighteen inches deep, two feet will be better, and unless the soil be good it had better be taken away and new and proper stuff as before described put in its place; but if the soil be good loam, a mixture of leaf mould and dung, or leaf mould and peat, according to its destination will answer all purposes.

HYACINTHS. — Plant in borders or beds. When planted in borders, there should be the three colours in a patch, placed triangular fashion, each six inches from the other two, with the two parallel with the edge, and the one behind thus :

*

*

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In beds they may be planted with very considerable taste and effect by diversifying the colours, that there may be no two come together of the same colour. We have in this beautiful flower light and dark red, light and dark blue, white and yellow, which yellow by the bye, is at most a straw colour, and as it does not add much to the effect, may be dispensed with. The arrangement of a bed may be very nicely managed so as to give a brilliant and uniform appearance when standing at the end, and square clumps or little beds might be made to look very brilliant, and only to require forty-nine bulbs. The arrangement is to be managed very much like Tulips, by only attending a little to the planting.

| | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|
| White | L. Blue | L. Red | White | L. Red | L. Blue | White |
| L. Red | White | D. Blue | D. Red | D. Blue | White | L. Red |
| D. Blue | D. Red | White | L. Blue | White | D. Red | D. Blue |
| White | L. Blue | L. Red | White | L. Red | L. Blue | White |
| D. Red | White | L. Blue | L. Red | L. Blue | White | D. Red |
| L. Blue | L. Red | White | D. Blue | White | L. Red | L. Blue |
| White | D. Blue | D. Red | White | D. Red | D. Blue | White |

Of the particular names of the flowers which would best answer the purpose for this arrangement, it is hardly wise to say much, because there are hundreds, and the great point to look to, is to get such as will all bloom at the same time. It will be observed that we have put a double share of whites. This gives lightness to the bed. The seven rows of seven each form a square, at six inches apart every way, and the best way is to apply to a nurseryman or seedsmen for early flowers, as nearly as possible of an equal height, for, as price is an object when a quantity is used, and the cheapest are in many instances the best for this purpose, you must be guided a little by the sorts he can serve you with lowest. When your bed is dug, rake off three inches of the top, and level the surface. Mark the places as you mark a Tulip bed, by lines, either drawn with a small hoe, according to a line stretched for the purpose, or with a piece of straight lath, and place the bulbs thereon, according to arrangement, pressing them very gently into the soil enough to steady them, then return to the bed the three inches you have taken off, and it will cover the bulbs about an inch and a half above the crowns; these, like the Tulips, will bloom and look very well, if left unprotected until they flower, but they will

come the more perfect, and last the longer, if they are kept from frost from the time they are in the ground, until they are in flower, and from the wet, as soon as they show colour. An arrangement of colours only is given here, but if any one likes to grow a collection, instead of a few bright and distinct sorts, all the management necessary to give effect, is to have the same kinds on each side of the middle flower; that is if grand Vanquee is the white on one side, it shall be grand Vanquee on the side opposite, and so throughout the bed. On this account you must have all the flowers by name, or you may have darks of different shades, and lights of different shades in the same row of flowers. For cheap bulbs to grow in patches, in wildernesses or shady walks, or even in the open border, you may buy mixtures, in which case, that you may have the three colours in each patch, have blue mixtures, white mixtures, and red mixtures, separately, that you may take one of each; plant them with a trowel two inches below the surface, first, however, turning a spit of mould up to loosen it.

Subjoined is a list of Hyacinths which are in great esteem, with the prices at which they may be had at the respectable seed shops. They are arranged under their several colours as a guide to the purchaser. The catalogues contain hundreds of others, but it was thought advisable to make something like a selection, and thus reduce the trouble and difficulty of the grower in making his choice.

The following Twelve are the best and most certain for blooming in glasses.

| | | |
|---------------------|---|-------------------------|
| Groot Vorst, | } | <i>Red and Pink.</i> |
| Waterloo, | | |
| Princess Elizabeth, | | |
| Lord Wellington, | | |
| Lord Wellington, | } | <i>Blue and Purple.</i> |
| Mignonne dryfhoute, | | |
| Nimrod, | | |
| Lord Grey, | | |
| Anna Maria, | } | <i>White.</i> |
| Don Gratuit, | | |
| Grand Vanqueur, | | |
| Premier Noble, | | |

The above Twelve can be had for 8s., at Hurst and Co., 6, Leadenhall Street.

A List of good Hyacinths, with their prices, selected from many hundred, for planting in a bed, or for potting.

DARK DOUBLE RED.

Belvidera, dark red, 2s. each.
Bouquet Tendre, or (Waterloo,) 6d. ditto.
Compte de la Coste, 1s. 6d. ditto.
La Guirland, 3s. 6d. ditto.

LIGHT DOUBLE RED.

Groot Vorst, light red, or rose, 6d.
Betsy, ditto, 1s. 6d.
Madame Zoutnan, ditto, 9d.
Panorama, ditto, 6d.

DARK SINGLE RED.

Cochinelle, dark bright red, 2s. 6d. each.
Debits Sabals Kansky, ditto fine, 1s. 6d.
L'Ami du Cœur, ditto, 8d. ditto.
Mars, ditto, 1s.

LIGHT SINGLE RED.

Johanna Christina, rosy red, 1s. 6d. each.
L'Honneur de Sassingham, ditto, 9d. ditto.
Lord Wellington, ditto, 1s. ditto.
Princess Elizabeth, ditto, 2d.

DARK DOUBLE BLUE.

Bouquet Constant, splendid dark, 7s. each,
Buonaparte, ditto, 3s. ditto.
La Majesteuse, ditto, green tips, 1s. 6d. ditto.
Lord Wellington, ditto, 8d.

LIGHT DOUBLE BLUE.

Alamode, purple eye, 9d. each.
Compte St. Priest, light, fine, 3s. ditto.
Mignonne dryfhoute, 1s. ditto.
Parel Boot, ditto, 1s. 6d. ditto.

DARK SINGLE BLUE.

Blucher, dark blue, 1s. 6d. each.
Gumal, ditto, 3s. ditto.
Haller, ditto, 9d. ditto.
Quintin Durward, ditto, 1s. 6d. ditto.

LIGHT SINGLE BLUE.

Lord Grey, fine light blue, 1s. each.
Nimrod, ditto, 1s. ditto.
Porcelaine Sceptre, ditto, 9d. ditto.
Voltaire, New, ditto, 1s. 6d. ditto.

DOUBLE WHITE.

Alamode, double white, 1s. each.
Anna Maria, ditto, 9d. ditto.
Gloria Forum, supreme, 3s. ditto.
Miss Kitty, 2s. ditto.
Prince of Waterloo, 2s. ditto.
Prince William Frederick, 1s. ditto.
Queen Victoria, 2s. 6d. ditto.
Sceptre d'or, 1s. ditto.
Sphæri Mundi, 1s. 3d. ditto.
Sultan Achmet, 9d. ditto.
Triumph Blandina, 9d. ditto.
Virgo, 1s. ditto.

SINGLE WHITE.

Grand Blanch Imperial, 1s. each.
Grand Vainqueur, 9d. ditto.

La Candeur, 1s. ditto.
 Premier Noble, 9d. ditto.
 Prince de Galitzen, 1s. ditto.
 Tubiflorum, *New*, 3s. ditto.

ROSES.—Plant where they are to bloom and remove any that require it, as it is the best month in the year for the purpose. Procure Rose stocks from the nurserymen, or from people who hawk them about, and plant them in rows eighteen inches apart, and three to four feet between the rows. Here they may be allowed to stand for budding or grafting on. The ground should be well trenched and dunged before they are put in. The roots must be well pruned before planting, and not planted deeper than they have already been in the ground. All tender Roses on standards should be protected, and if they are an object they should be removed altogether under shelter.

Shrubs may be removed and planted either to make alterations or for laying out new work, they should also be pruned, that is, all straggling uncouth branches should be shortened or removed, all shoots which are too vigorous should be cut in or cut away altogether: generally plants should be cut in to make them fill up their surface well, and on taking off portions of a branch they should be so cut that the leaves conceal the cut. In removing shrubs, commence digging all round at about the distance to which you expect the root extends, and take great care not to damage or shorten any of them. On the removal of the root without damage, depends the success of the plant, which, if not injured, will not drop a leaf, nor feel the effects of the removal. The proper treatment of a shrubbery comprises judicious pruning among the most important duties. You should go round the borders and clumps with your pruning knife and a small saw in your hands. Where you see a shrub growing at all out of bounds, or throwing out any very coarse and vigorous branches, remove all that are not wanted. Whenever shoots push out beyond the ordinary surface of the foliage, reduce them at once to the length of the rest, or, if they be not wanted, take them away altogether; and where you want a tree to be more bushy, shorten all the principal branches a little. You may thus bring trees into any shape.

Examine carefully all the kinds of shrubs, Roses, *Pyrus Japonicas*, *Ribes*, *Berberis*, *Andromedas*, and others, which throw up suckers; remove every one of them, with a bit of root to each, if you can, and plant them out in nursery rows, or in places where you want them; they will make excellent plants. They should, however, be shortened to half their length above ground, unless you wish to make them into standards, in which case you may leave them their full length, and let none but the leading shoot be on them. You may make standards

of every thing. The *Pyrus Japonica* is perhaps as obstinate as any shrub in the world, but I have made them into standards five feet high, and they are the most beautiful objects as specimens that can be imagined. The only thing necessary to be observed, is to take a strong growing shoot, and tie up to a stake, removing all lateral shoots from it as fast as they appear, and cut away the rest of the plant. This shoot will grow a good deal, but if it does not grow enough the first season, let it have the second. Treat it as I have directed with the Gooseberry—it will repay you for all your time and trouble with its singularly beautiful growth. *Rhododendrons*, *Portugal Laurels*, *Baysommon Laurel*, *Chinese Privet*, *Ribes sanguineum*, and *speciosum*, hardy *Azalias*, *Magnolias*,—in short, almost every thing inclined to grow bushy, may be forced into the form of a standard, either for admixture with the general shrubbery, or for single specimens on the lawn.

When turf is laid down newly, it ought to be beaten all over with a sort of mallet, constructed on purpose. A piece of wood, three or four inches thick in the middle, cut off the outside of a tree, flat on the one side, and rounding on the other, nine inches wide, and eighteen inches long, must have a hole for the handle made sloping in it, so that when the flat side is on the ground the handle shall slope very much; by suiting this slope so that it can be lifted by the handle, and be struck hard and flat on the turf, it closes all the edges of the turf, flattens out the surface, and gets rid of all irregularities. It may be rolled with a heavy roller, and mowed frequently when the grass once begins to grow, but at present it is useless doing more than laying it down all over even, beating it very close down and level. It is better not to cut the edges of the turf even, until it has settled down and taken to the ground, which it will do in a very short time: then, with a proper knife, the edges may be all trimmed and set square. Therefore, in first laying it down you only care about the general outline. The neatness of the verges when it is all finished depend on the correctness of the eye, and the steadiness of the hand, when trimming it, after all the laying down, beating, and clump planting, are completed.

Cover **CRYSANTHEMUMS** whenever it is desirable to preserve their bloom, as in case of those in pots when you have no room to house them. This may be done by hoops or any temporary frame work, and mats.

Complete taking up **DAHLIAS**.—Let small stock cuttings be preserved in a growing state, and those which have firmly rooted must be protected from the slightest frost by taking them into the house or greenhouse or pit.

Cover all *Fuchsias*, and other half hardy or greenhouse plants, which it may be desirable to let stand out, with tan or haulm, or short straw,

or stable litter, a foot thick. Fuchsias against the fronts of houses, or walls, or in clumps, will, when thus treated, die down to the root, but make more vigorous growth in the season, than any newly planted.

Valuable and even delicate shrubs, where it is practicable, may be wonderfully protected, by loose litter round their stems, and thrown carelessly over their foliage. Tea plants, and the *Camellia Japonica* will be preserved thus from ordinary frost: a piece of old woollen cloth or serge, thrown over each of the heads of *Standard Noisette* and *China roses*, saved a small collection, uninjured by an extreme frost.

Watch and cleanse all the plants in the greenhouse or pit, that have the least inclination to get foul; the principle of an old adage, "a stitch in time saves nine," never applied more pointedly to anything than to the management of plants. The green fly, red spider, scale, and mealy bug, if neglected but a short time, will get such an ascendancy as to cause months of labour, and beat you at last. The slightest inclination should be checked, by syringing,

washing, or fumigating, as the case may be; for red spider, syringe with water under the foliage and dust with sulphur.

Bulbs for blooming in pots or glasses, should on no account, be neglected after this month.

TULIPS.—Plant the best beds; it will be found a good plan to lay the soil even, to place heaps of sand on which to plant the Tulip, to cover each bulb with sand, and then carefully to place from three to four inches of soil above the crowns. It is better than dibbing by far for the best kinds, for it only hardens the soil makes a sort of lodgment for wet, and is otherwise mischievous. In arranging a bed of Tulips, the most effective and beautiful method is to have three duplicates in each row; that is, let one and seven be the same, two and six the same, three and five the same, and the centre one completes it. On looking at a bed thus formed, the effect is beautiful, both sides being alike.

My arrangement of a bed differs from that of the old school of florists, but many are falling into my plan, for instance, the old florists arrange them thus:—

| | | | | | | |
|------|------|------|------|------|------|------|
| Rose | Byb. | Biz. | Rose | Byb. | Biz. | Rose |
| Byb. | Biz. | Rose | Byb. | Biz. | Rose | Byb. |
| Biz. | Rose | Byb. | Bi z | Rose | Byb. | Biz. |
| Rose | Byb. | Biz. | Rose | Byb. | Biz. | Rose |
| Byb. | Biz. | Rose | Byb. | Biz. | Rose | Byb. |
| Biz. | Rose | Byb. | Biz. | Rose | Byb. | Biz. |
| Rose | Byb. | Biz. | Rose | Byb. | Biz. | Rose |

And so on. They begin at the left hand corner at top, and keep on planting Rose, Byb., and Bizarre, which keeps changing all the rows, and if you look to the arrangement, you will observe that the Bizarres, the Roses and the By-

blomens, all form sloping lines across the bed. Now, I prefer their forming a sort of herring-bone pattern, by making the Rose, Byblomen, and Bizarre, the same on each side the centre row, thus:—

| | | | | | | |
|------|------|------|------|------|------|------|
| Rose | Biz. | Byb. | Rose | Byb. | Biz. | Rose |
| Byb. | Rose | Biz. | Byb. | Biz. | Rose | Byb. |
| Biz. | Byb. | Rose | Biz. | Rose | Byb. | Biz. |
| Rose | Biz. | Byb. | Rose | Byb. | Biz. | Rose |
| Byb. | Rose | Biz. | Byb. | Biz. | Rose | Byb. |
| Biz. | Byb. | Rose | Biz. | Rose | Byb. | Biz. |
| Rose | Biz. | Byb. | Rose | Byb. | Biz. | Rose |

The effect is according to my opinion infinitely better. With regard to the planting the rows in duplicate, those who can do it will be very much gratified; we mean, suppose the middle flower were a Duke of Clarence Bizarre, one in each side should be alike, say *Rosa blanca*, the second on each side *Byblomen*, two *Rubens*, the outside ones *Bizarre*, two *Gloria Mundi*. This is what we mean, and carried through the bed it is very beautiful. The heaps of sand which, say, may be put six inches apart all over, the bed, to place the roots in is perfectly unnecessary, but it marks the bed well, and if a tulip rots in the ground, and perhaps only leaves a little offset or two, the sand shows you where to look for them, but it is of no other use. The easiest way to mark your bed is to paint strokes on the side and end boards six inches apart; you then rake the bed level four inches below the edge of the board, or the height you intend the bed to be, then stretch the line from end to end at the several marks, and draw the slightest possible drill or mark with a hoe: repeat this till you

have made the seven straight marks the entire length of the bed, then with a piece of lath or straight wood as long as your bed is wide, let one on each side the bed press the corner of it into the bed, just enough to make the cross marks; you have then marked the place of every Tulip; use the sand or not as you like, for they grow just as well without as with it: place all your bulbs upright in the bed at the proper distances; then put over each bulb, to hold it in its place upright, a handful or two of sifted mould; and after all are thus secured from falling, sift the soil over them till they are covered full three inches on the side and four in the middle row; do not delay this after the second week, and, if you can help it, not after the first. They may be left for the present, but they ought to be protected from the frost at any sacrifice of trouble, though persons who are not particular in their bloom care but little about it till the spikes are above ground. Complete the planting of all the outbeds, these may be dibbed into the ground as mentioned last month, and they ought to

have been all planted last month, but people are generally careless of their outbeds and breeders, and protract the planting instead of getting them right off their hand while the weather is sure to favour them. In all other respects follow the directions of last month.

THE FRENCH PHILOSOPHY OF PLANTS.

THE chemical botanists of this country for a long time wearied themselves with experiments and discussions upon the various ingredients which enter into the composition of plants, with a view of establishing a theory for their proper cultivation. The modern practice, however, of "rotation crops" has set our ingenious neighbours, the French, upon a fresh scent. M. Candolle and his brethren profess to have discovered a new principle, namely, that the roots of plants act as excretory organs, and carry back to the soil (if I rightly understand them) not, as in the case of animals, the nutriment of the plant in an elaborated state, but the unwholesome particles which it may have taken up with it, and which it rejects as injurious to its growth. The conclusion they draw is, that the soil thus becomes charged by a plant with the elements noxious to its health, and is consequently unfitted for its reception again, until a succession of other plants, to which they are, on the contrary, nutritious, shall have absorbed them. I confess that I am not satisfied that this principle (if it exists) is the one which produces the phenomenon upon which it is founded—namely, that a plant deteriorates by repetition upon the same soil. The excretory power of the roots may exist, but I doubt whether it is of the noxious character attributed to it. Wheat upon wheat, too, certainly will fall off; but I doubt whether it is the excrement of the first crop which causes the failure of the second. Nature is so uniform in her designs and operations, that the functions of the roots are undoubtedly the same in all plants; and if the excretory poison is so deadly to the plant which discharges it, as the French school suppose, how are we to explain our durable grasses, our perennials, and our "oaks and cedars of a thousand years?" It strikes me that the repetition of the same corn crops upon the same soil not succeeding, may be better accounted for thus:—In preparing the land for corn, we *plough in* a portion of the straw, and all the root of the preceding crop; and, if we repeat the same crop, we thus manure for it with its own kind, which, by analogy, may, perhaps, be as injurious as what, in the procreation of animals, is called *breeding in and in*. I have seen clover as high as my knee ploughed in as a manure for corn, and bring astonishing crops; but it would not have done the same for another crop of clover. There is also another experiment, which M. Candolle may try, superior to any chemical analysis—those plants which are

wholly extracted by hand may be repeated upon the same soil, with the same culture, without any sensible deterioration.

RYE AS A GREEN CROP.

SIR,—The utility of Rye as a green crop is known to many. For the information of those who may be unacquainted on the subject, I beg to offer a few observations.

As to the preparation and soil suitable to it, I have known it cultivated very largely on what we term half land, or cut away bog, with ashes of the same as manure, as a white crop: seed sown in September, or October, at the rate of 16 stone per acre. The crop came in for the sickle in August and September following.

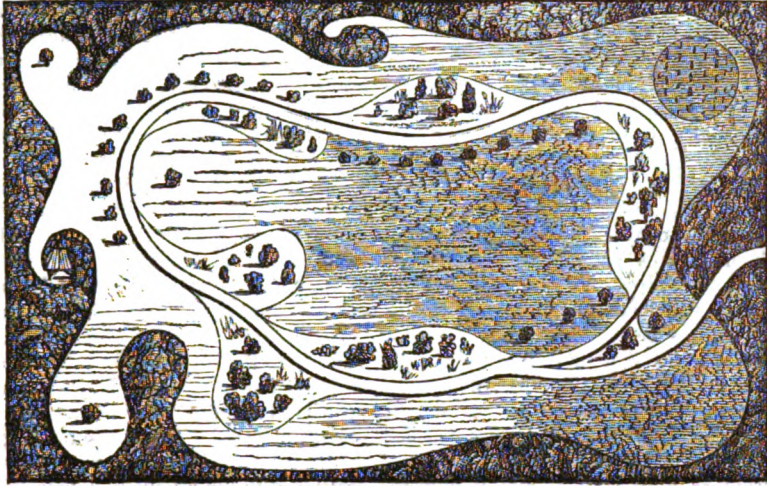
But it is to its utility as green feeding, I would more particularly call attention. The soil, manure, and time of sowing, quantity of seed, as before mentioned, will also answer it in the green feeding mode. I would add, that it will succeed in any description of land, where a green crop, potatoes, turnip, &c. has been raised the same season, or where vetches have been cut away. In this latter case, it will be necessary to manure the land.

One of its great advantages is, that it comes in early, (say April.) and can be cut for use; another is, it has a property of increasing milk in cows, to a very great degree. Horses and sheep eat it with great avidity.

We often see it sown with vetches, but not so often as a distinct crop.—*Irish Farmer's and Gardeners' Register.*

WASPS.

THESE insects are remarkable for the curious *papier-maché* edifices, in the construction of which they employ filaments of wood, scraped from posts and rails with their own jaws, mixed with saliva, of which the hexagonal cells, in which they rear their young, are formed; and often their combs are separated and supported by pillars of the same material; and the external walls of their nests are formed by foliaceous layers of their ligneous paper. Latreille mentions a Brazilian species that makes an abundant provision of honey. Wasps seize flies of every kind that come in their way, and will even attack meat; the caterpillar-wasp (*ammophila*) walks off with *caterpillars*, the spider-wasp (*pampilus*) with *spiders*, and the fly-wasp (*bombex*) with *flies*. But the motive that influences them will furnish an excuse for their predatory habits, it being to provide their young with the food suited to their natures. The wasp carries the pieces of meat she steals from the butcher to the young grubs in the cells of her paper mansion. The other wasps above-mentioned each commit their eggs to the animal they are taught to select, and there bury it, so that the young grub when hatched may revel in plenty.—*W. Kirby.*



FLOWER GARDEN AND SHRUBBERY.

THE great art of forming the Shrubbery and Flower Garden is to make use of the entire space here and there, but to so contrive the boundary plantation as to make it seem a part of the diversified clumps instead of the extent. Now, as you cannot go further with the boundary shrubs than the wall or fence will allow you, you must contrive to bring forward portions of the plantation, and form sham openings, which may, for all the spectator knows, lead to a hundred more acres, whereas, you find the openings turn round, and terminate abruptly in a summer-house, a pedestal, or a statue. In the above cut there is an example of this trick, as it may be called, in laying out the boundary plantation. These little nooks may be, in a very small garden, four feet wide, or even six feet, at the entrance, and lead within to a narrower space, or to a wider, as may be most approved, or some may be one way and some another. In no case should there be clumps about the middle of the lawn; they destroy the apparent size of the place; the grass should be perfectly free from beds, trees, and shrubs. The proper place for clumps is next to the path or road, with just the width of the green verge to part it from the gravel. The principal, and, indeed, if we had any thing to do with it, the only walk in the garden, should be gently winding its way by easy sweeps or bends completely round the premises, far enough from the boundary to prevent its being conspicuous. Wherever there is a sharper turn than ordinary there must be an excuse for it. The turn of the path must be apparently to go round a tree or a clump, and as you make your walk first, you must so dispose your clumps afterwards, as to make them

appear original features which your path winds about to clear, instead of clumps worked afterwards to the walk. The belt of shrubs which is next the boundary wall should be chiefly evergreen, and be planted thick, for immediate effect, even though they have to be removed two years afterwards. Deciduous plants should be few, and either very dwarf in front of the evergreens, or very tall, to throw their heads above them. In selecting plants for this purpose, hollies will be found very useful, and the taller the better. If these be well furnished with branches and foliage to the bottom, they may be faced with delicate shrubs. If they are not bushy to the bottom, the better way is to cut up any of the lower branches that may be in the way, and plant strong bushy shrubs to hide the trunk. In laying out large premises, the outer belt, to be planted effectually, should be six feet in the narrowest part, although much less must do in small places, and then the fence or wall should be blackened to prevent its looking conspicuous, which light bricks or fence will wherever the trees are thin; but the border and belt should in no one place be straight.

By bringing out a boldness here and there, the effect is very much heightened, and although the sketch here given is by no means given as a good specimen of landscape gardening, there are many worse plans. The principal object in our present example was to crowd into it the various features which would do for a place of great size. The clumps next the path are examples of the different modes of applying that feature, while the outer belt illustrates in variously formed openings, which deceive the eye into imaginary extent, and the single plants next the path,

though by no means intended as perfection, give some idea of the most effective distribution of fine specimens. The circular bed will show one of the best plans for introducing a Rosery, and the corner behind it would be a good situation for a temple or a summer-house. The clumps by the sides of the main walk are ill represented, they should be clumps of shrubs, planted sufficiently close to prevent any one from seeing through them, whereas here they are represented as large spaces, with shrubs scattered here and there, without form, system, or, so far as any one can tell by looking at them, object. Such clumps should have very tall plants in the middle, less lofty ones round them, and dwarf ones still forwarder, a foot or two in front of the shrubs being left for bright border flowers. So also the belt all round should be a thick mass at the back, but forwarder, there should be lower ones, and front, of all should have been a couple of feet of border left for flowers; instead of which, the mass is made as thick in front as at the back, and it appears as if it were planted thickly to the very edge of the borders. In future sketches we shall be more particular, because our object is to follow up this subject with a series of examples and papers, calculated to interest every occupier of a Garden.

FLORISTS' FLOWERS,

By Geo. Glenny, from the "Gardeners' Gazette."

ACCORDING to the old books on Gardening, and one of more modern date published by Curtis and Milliken, florists' flowers comprised the Auricula, Pink, Carnation, Tulip, Ranunculus, Hyacinth, and Polyanthus. There are some particular points belonging to all these, which constitute their claim to the distinction. First, they can be raised from seed, and the seedlings produce new varieties; second, they can be propagated so as to perpetuate a new variety when it is produced. This latter quality is as essential as the former to constitute a florist's flower. An annual, therefore, cannot be classed among florists' flowers, because you cannot, when you have got a variety, perpetuate it. The two essential qualities pointed out enable a florist to name his new variety after some near friend, or some favourite, or to indulge his fancy in the distinguishing title he gives it, and the propagation and distribution of the plant by cuttings, offsets, layers, or by grafting, sends it forth to the world as well known by its name as a cabbage is known from a cauliflower. The emulation of the florist to raise something that should bear his name is secured, by the simple fact that he transmits it to posterity, as well, as sends it about in his life time; and we accordingly find that men in very humble station were induced long since to raise seedlings and name them

sometimes when they were worthy of general cultivation; sometimes when they are not. Our best flowers bear their raiser's name as well as the name they received from him. Page's Champion, Fletcher's Ne plus ultra, Waterhouse's Conqueror of Europe, are familiar among Auriculas. Barnard's Mrs. Barnard, Dickson's Trip to Cambridge, and Twitchett's Don John, are examples of Piccotees and Carnations, but they are only few among thousands of florists' flowers which bear their raiser's names as well as their own. But as flowers which have the two great qualities we speak of—the capacity of being reared from seed in new varieties, and of being perpetuated when worth the trouble, were always desirable, additions were made to the list of favourites and in our own days, Geraniums Piccotees, Pansies, and Dahlias, to say nothing of others, have been, as Mr. London once very properly expressed it, 'elevated to the rank of florists' flowers.' There is something fascinating in the pursuit of novelty, and beyond measure gratifying in the raising of a good flower. Some men pursue it with ardour, but without success; others with trouble achieve as much in a year as a man may reasonably expect to do in a whole life. The charm lies in the fact that of ten thousand seedlings of florists' flowers you will not find two alike, and therefore your hopes are raised in anticipation of producing something better than the parent. It seems strange to a person uninitiated that a catalogue of five hundred flowers, named properly, represents just so many varieties, which a good florist could know from one another as well as the most public men know five hundred people. The features of a flower, which may seem to an indifferent person like hundreds that he has seen before, may be, and indeed to some are, so familiar, that they will in one instant name the variety, and the man who raised it. The very cast of a petal or shade of a white (so called) may be the only circumstance which can be described, yet a florist will distinguish it as well as we can tell an acquaintance when we meet one; and it is the great charm of floriculture—that is, the cultivation of florists' flowers, that when we have produced one worthy of being named, ten thousand thousands can be raised from it, the exact prototype of the parent.

Then arises a question, what makes a new flower worthy of being named? and what constitutes the comparative merit of the thousands already known? To the first as well as the second question we must answer, taste. Who then is to decide the taste by which the floral world is to be governed? There is no means of trying a flower as there is a horse, which you may race; a pigeon, that you may fly; a dog, that you may fight; or a bullock, that you may weigh; who then is to govern our tastes, or to settle the value of a flower? The commonplace answer to this would be, 'the best autho-

erty; and what or who is that? The man who founds his opinions on those principles which the public can understand. In Miller's day it was Miller; in Curtis's day it was Curtis; and, reader, we can afford to be taunted with a charge of egotism; for no man living can deny the fact, that in our day it is *ourselves*. We have for ten years been prime minister at the court of Flora; and although the usual intrigues against all court favourites have occasionally baffled our efforts, we are still her prime minister. To be serious, we saw years ago that the best authorities on the properties of flowers were very deficient, and we endeavoured to found some general rules on the principles of common sense. Those principles we will describe, because we have outrun all our predecessors, and created imaginary models of perfection which may never be reached; but there is no difficulty in deciding which makes the nearest approach. The principles are such as all persons of common sense will at once agree with. First, a flower should be lasting, nobody will dispute this; second there should be plenty of it. Now the first of these points is most important, and suggests that the petals of a flower should be thick; the second, although by rather a stretch of imagination, suggests it should be round. If the butter-cup of the field and the ranunculus of the garden were placed before the child untaught, there could be no indecision manifested. If the dog rose of the hedge and the moss rose of the parterre were placed before the most ignorant man alive, he would instantly choose the latter. The only thing which determines whether a flower shall belong to the garden or the field, is the quantity of its bloom, or its perfume, or the beauty of its foliage. Abstractedly, the flowers of many weeds are handsomer than those of favourite garden flowers; but the former have ugly foliage, and too much of it; the latter have handsome foliage, and very little of it. Who has not seen the banks spangled with many gems which he has thought would grace a garden? If, however, he had allowed himself to examine the ugly or uncouth appearance of the whole plant, the reason why it is not adopted would have been obvious. The fact is, that inasmuch as the beauty of all plants must be greatest when in perfection of flower; if that be scanty, there must be some excellency, to make up for the deficiency; hence, all our favourite garden flowers have great abundance of bloom, because the whole plant is the ornament of a garden: but in florists' flowers it is the bloom, without the plant, that settles its claim. But going back to the second principle involved in our decisions, quantity of flowers:—we set out with a proposition that flowers should be circular, because if a flower be star shaped or windmill-shaped, or have any vacancies, there is not so much in quantity, as if the circle of the same

size were full. And again; provided the shape be good, it is the reason why a double flower is better than a single one. Who has not seen the windmill-shaped looking flower on a single Stock, a single Wall Flower, a single Pink, or Carnation? Has he any difficulty in preferring the double flowers to them? We believe that the preference to double flowers over single, when the double flowers have any form, is universal; we except Botanists, because they as universally condemn as the public admire the improvements brought about by florists, and the professors see with poignant mortification the grand improvements we are making upon the Dog Roses, Butter Cups, and Daisies, which they seem to worship, and the innovations we have made on their botanical distinctions.

The world—that is to say, that part of the creation which rejoices in novelty, and has its share of common sense, at once perhaps the double flower to the single, whenever it is accompanied by uniformity. It prefers a round flower as it is, before the same flower cut into the form of a cross, or of a star, because there is more of it when round, and thousands who don't know why they prefer it, would choose a circular Heartsease out of a thousand of the usual form, without perhaps being able to explain why they selected it. We can tell them, that from the infant upwards, quantity of colour gives brilliance, and that if they will take the pains to cut half a dozen pieces of circular coloured paper, let one remain round, let them cut one into a star, another into a cross, and a third into a rosette, and place them side by side, they will not hesitate to prefer the circle whole to any form that deprives it of its quantity. It is this which makes people who never give a thought to the cause prefer a circular Pansey to the five-barred thing called 'Love in Idleness;' and it is the same love of quantity with uniformity that induces people to prefer the double to the single Rose. There is a third principle on which we found some of our laws of taste,—all roughness of a flower is eschewed by the majority of the public, even without their being necessarily able to tell us why; supposing there were no scent, ninety-nine people out of a hundred would prefer a Rose to a Poppy, for the Poppy is a jagged and ragged flower, while the Rose is smooth at the edge of every petal. The richness is materially affected by indentures on the edges of flowers, and, without a single exception, we care not whether the parties to be consulted be florists or not, a Rose, Camellia, Carnation, Pink, or Piccotee, looks the more rich in proportion as it is more circular. So, also, with respect to the rising of a double flower, the richest form is that which a ball would present. If it were higher it would look ungainly, and if flatter, it loses in richness. Therefore, with those flowers which rarely or never rise so high as the true

half of a circle, we have laid down the circle as perfection, because the more nearly they can be brought to it the better. Now, the difference between the authorities that preceded us, and ourselves, is this—our predecessors looked at the nature of a flower, and estimated the best as perfection; they enumerated the excellencies which had been attained, and called it perfection; we, on the contrary, simply consider what would look the best if we could produce it, and we start off with thickness of petal, because it lasts the longest, renders the colours more distinct, and more opaque, and holds its form best; this is our first and greatest; then smoothness on the edges, because it is more finished and perfect; roundness of the flower: these we apply to every thing, whether the make of it be, in a natural state, the shape of stars, or of a cross, or any other form, for we know the nearer it is like a circle the better it must be; and, though we have been blamed by the thoughtless for outraging nature, in requiring the *Pansy*, the *Geranium*, the *Azalia*, the *Cinreraria*, and others, to be circular, the laws we have laid down on principles which all the world can understand, have triumphed. The *Geraniums*, the *Azalias*, and the *Pansies*, which are most round, are most esteemed; and the star-like *Cinreraria*, which we were told would never be other than a star, can be found now with the petals blunt enough, and broad enough, and numerous enough, to fill up the space we condemned, and make its solid circle complete.

But if it never had and never could have done so, it would not have altered our determination to set down the circle as the best form. And now let any one who doubts the propriety and accuracy of our notion, upon this subject, take one of the roundest *Verbenas*, another flower that we require to be circular and compare it with those which retain the original windmill form, he will observe that it is beyond compare richer than its more open neighbour. The required form is no matter of whim or fancy, it is founded on that which makes indifferent people prefer it without knowing why. The close head of a round-blossomed *Phlox*, is as superior to the rugged bunch of blooms which the narrow petalled flowers always form, as gold is to dross, and the most uninformed will recognise the superiority. It is vain, then, to dream of subverting those laws and those principles, we have laid down. Though some writers cavil at trifles, and others less scrupulous repeat our maxims as their own, our rules are based so firmly on principle, that they will rule the flower world for years after we and our contemporaries are forgotten.

HOT WATER UNDER GROUND.

FLUED BORDERS.—The vigour with which males of the genus *Crinum*, and many other plants, grow out of doors against the front wall

of a stove, persuades me that a great variety of plants might, with a little care, be cultivated better in the open ground than under glass, if the border in which they are to grow were flued underground, and a tarpauling, or any water-proof covering, placed over them at the times when it might be requisite to exclude either rain or cold. The covering might hang on the two sides of a strong longitudinal pole, like the two slopes of a roof, and be made to roll up either with or without a spring. There are many plants which seem to enjoy a cool atmosphere, but will not flower or thrive vigorously without the stimulus of heated earth at the root. Having chosen a situation where a furnace and boiler could be placed underground, I would carry the smoke-flue as far as its heat would extend on one side, and hot water or steam pipes in a different direction, as might be found convenient, enclosed in a stone or brick flue, to as great a length as its influence might reach. In such a border, I believe, the genus *Hedychium*, and many others, would flower perfectly with the assistance of fire in the summer, requiring nothing in winter but a covering to throw off the wet; and the heat might be turned into other pipes, for the advantage of plants which might require the warmth in winter rather than in the summer. If in front of a wall, a moveable veranda, which might be either ornamental, or made of thatched hurdles, or hurdle gates, would throw off the wet, which is the principal cause of injury in winter; for many shrubs will endure the access of severe frost to the head, if all wet can be effectually excluded from the base of the stem, and from the root by any sloped heading. Under such a veranda, with occasional heat to the flue during the early summer, and perhaps in severe frost. *Amaryllis*, *Brunsvigia*, *Buphane*, *Nerine*, *Hemantus*, and all the allied genera of African bulbs, as well as the South American, would certainly succeed better than with any other treatment. I believe that not only those, but even some of the tropical *crinums*, would succeed better than in a stove, and probably many shrubs which might not be expected to live there. The advantage of a veranda or pent covering, however rude, on the north side of a wall, for the protection of half hardy plants, such as *Camellia Japonica*, the Asiatic species of *Rhododendron*, &c., is not sufficiently known. It is the excitement occasioned by the access of the sun that makes such plants liable to injury; and a south aspect, whether in summer or winter, is prejudicial to them. I believe that the covering of a pent roof, in a northern aspect, without any flue, is more congenial to those plants than a greenhouse, care being taken to prevent any heavy rain or snow from being driven upon them by a strong north wind, which is easily done by hanging mats along in front in such an emergency.—*Herbert's Amaryllidaceae*.

MR. CUTHILL'S MODE OF CULTIVATING THE MELON.

IN the first place, the seed-box ought to be set upon four inch brick-work, all round, with no holes, the inside filled up with fagots; put six or eight inches of dry leaves, with a little dry mould to finish, the linings can be fetched from the stable yard, and put direct to, finishing with a foot of leaves upon the top; when the seeds are sown, they ought to be sown in a pan, which is generally used under strawberry pots in the forcing houses; the reason for that is, the roots strike direct to the bottom, which makes them much more fibrous rooted than sown in a deep pot; the soil should be half loam, the other half leaf, or any light mould; the heat of the bed must never get below seventy, nor above eighty degrees, with an inch of air night and day; no covering, unless very bad weather; when the seed leaves separate, it is time to pot them; the pots used are sixties, or five inch pot, with two plants in each; the drainage ought to be horse-dropping, dried on purpose; the mould must also be very dry, to allow of a little water to settle the roots; the roots ought only to be covered, and filled up by degrees afterwards; the usual practice is to fill up with mould at once, and next morning we find the plants drawn and half spoiled, by the heat of the mould and watering together; when water is required, keep a little very dry mould in the frame, and put some on the surface of the pot about an hour after watering; that is the only preventive against damps. In setting the plants in the frame they ought to range east and west, and if possible to change their position right round every day. If your seed bed stands exposed, you might put up a screen of matting to keep off the cold north winds, but never allow your covering to lap too far over—to keep out the cold air as people suppose—for heated air will always prevent cold from entering. If the above directions have been properly attended to, plants will be ready to put out in five weeks. I am speaking of Melons sown the 1st of February; I also consider half the labour and care is over when the plants are moved from the seed box. Take great care of an infant the first year, and its constitution will be sound and its legs straight for ever afterwards—the same with a vegetable; all the skill a man can possess will not make a productive plant, if not well attended to when very young. Now for the planting out. Your plants by this time have been once stopped, say 5th of March, and the pit or frame got quite ready, the hills ought to be fifteen or eighteen inches from the glass; the plants thrive much better on account of the great body of air; the first hills ought to be one foot high, composed of half loam, the other half leaf or any light mould; no dung mixed with the hills. In planting out, let one plant take the back, the

other the front of pit or frame; watering depends upon the state of things at the time. In the course of a short time they will want a second stopping. As the roots appear lead them down the hills by covering them with a little mould, adding at the same time about two inches of mould over the surface of the bed, and as the roots cross the bed, when any make their appearance, they must be covered over with mould, kept in pots in the pit on purpose, and continue doing so until the fruit are all set; but after that time they must not be disturbed, neither must you over-mould the bed. When finished, the hills ought to be four inches higher than the surrounding mould; six or eight inches I consider is quite enough for very early Melons. I allow three or four runners from each plant, and when they grow within six or eight inches of the frame I stop them. They in a few days put out their side shoots with fruit in abundance. Stop them one joint beyond the fruit, leaving three or four fruit upon each plant. If one or two are wanted very early, cover the fruit with sand or dry mould. After it gets the size of a walnut, you may plunge a glass, if you want to know the heat; you will find the fruit swelling rapidly in a bottom heat of about ninety, at fifteen degrees more than you dare keep the atmosphere of the pit at. I syringe a great deal over head and round the flues with diluted dung water; but as soon as I see the Melons are nearly full grown, water is withheld altogether; but in watering, I never allow any to touch the centre of the plant. I may state, also, that I am not a great advocate for much dung with the mould, neither do I like mould over stiff, neither do I allow the mould to be trod like a highway. I always keep a toad in the frame from the very beginning to eat the wood-lice. By strictly adhering to the above, I have cut Melons four years, from the 5th to the 10th of May. I have also set fruit upon the 5th of April, and cut the Melons upon the 5th of May. I have been awarded medals from the Royal and Chiswick Societies, and the only person who has produced Melons at the first shows of those societies, until the late May show at Chiswick last year, when my friend, Mr. Snow, came forward.

ON THE RELATIVE MERITS OF WOOD AND IRON IN STOVES.

I HAVE, for more than six years, had the management of forcing-houses, constructed of wood and cast iron; and so decidedly convinced am I of the superiority of wood, that I have no hesitation in saying, that when the merits of wood, and demerits of iron, are fully ascertained, the enormous idea of iron being preferable will immediately cease to exist in the minds of all practical gardeners like myself. Almost every person acquainted with expansion and contrac-

tion of almost all substances, particularly iron and other metallic bodies, may form some idea of the expansion of a large iron-roofed house on a hot summer's day, and of the contraction of the same on a cold frosty night. So great has been the action of the sun upon a hot day, that I have witnessed, in fact assisted, when the lights have required the strength of two men to force the moveable lights to admit air; and in equal proportion is the contraction on a frosty or cold night, that there have been apertures between the rafters and lights for the ingress of the atmospheric air, that it has quite counteracted the power of two strong fires for two or three hours, though I have seen the flues, where the fires enter, nearly red-hot for ten or twelve feet before the houses could be rose three degrees by Fahrenheit's thermometer, and this not in a house of large dimensions, being only forty feet long, sixteen wide, and nine high, consequently contained but a few cubical feet of air. The wood roof I am about to describe, which, I think for answering all purposes, was of the best construction I ever experienced, was built on the following plan; which plan I most strenuously recommend all gentlemen to adopt, where they wish to combine usefulness with lightness of appearance. The rafters were of wood, tapered off to nothing, or about three quarters of an inch thick at the bottom, and about nine inches deep. The four sides of the lights were wood also, but the sash bars copper, which was not required to be so deep as wood, such bars consequently would not be so much obstruction to the morning and afternoon rays of the sun. Now for the comparison as regards fuel and labour. But before proceeding to compare the consumption of fuel, it will be necessary to give the dimensions of the wood-roofed house, which was fifty feet long, fourteen wide, and sixteen high, we never consumed more than three bushels of coals to keep it to the same temperature as the one of iron, and which consumed nearly six bushels a night. There are other objections and inconveniences attending them, namely, almost unremitting attendance on severe nights, or until three or four o'clock in the morning, particularly when iron is applied to early forcing-houses, when the wood-roofed might be made up and left with great safety at eleven o'clock. I have invariably found that plants do not thrive nor look so healthy under an iron as a wood-roofed house, from metal being so great a conductor of heat and cold, which subject plants to the well known and injurious extremes of heat and cold. Moreover, during the hot months of summer, have always found it necessary to shade all metallic-roofed houses, notwithstanding they were thrown as open as the doors and lights would allow, to prevent the pines and vines from being scorched. I have also experienced, that unless iron-roofed houses are painted annually, the drip from the condensed vapour

dropping from the rusty and corroded iron injures and disfigures the foliage of plants. But I have this season extended my observations on the subject further, which you will find further confirms the accuracy of my former remarks, by forming two houses at the same temperature—55 to 60 degrees of Fahrenheit's thermometer—the wood-roofed never consuming more than one and a half to two bushels of coals, when the iron burnt from three to four bushels per night. The dimensions of each house are as follows:—the wood-roofed fifty feet long, fourteen wide, sixteen high; the iron, fifty long, sixteen wide, twelve high, which was a vinery, but had a pit in it for the culture of pines, consequently occupied a large space in the house, and of course very much reduced the number of cubical feet of air to be heated in the house, compared with the wood-roofed, for the culture of peaches which had no pit. T.

THE PURPLE GUAVA—ITS BEAUTY AND USES.

THEY who do not possess this fine plant, having the means to cultivate it, are deficient in that for which it would not be easy to find a competitor. It is a true and most beautiful evergreen, stands firm to its colours, and does not on any slight occasion take tiff and desert you. It may be relied on at all seasons, is always lovely, graceful, and unostentatious. This is saying a good deal; but we have still an object in view, which shall be disclosed after we have endeavoured to establish the botanical character of our favourite.

The Guavas (*Psidium*) are fruit-bearing shrubs of the West Indies. The pear-fruited *P. pyriferum* produces a berry of a large size, which is eaten freely by natives and Europeans; and of the pulp is prepared the delicate sweet-meat called guava jelly. There are five or six species which have been long known here as stove plants, though rarely met with in collections; but the one which is the subject of this notice, is of recent introduction (1818), and is less tender than its congeners. It is indeed a hardy greenhouse plant, though a native of South America. The genus is one among other members of the natural order *Mystaceæ*, and our plant, *Psidium cattleianum*, may be cited as a correct example of the myrtle tribe; it is closely allied also to *Eugenia*, and, like *E. Myrtifolia*, is one of the most graceful evergreens of our collections. The leaves are an inch and a half long, obovate, glossy, extremely firm and durable; they furnish the plant completely; and, as the branches are numerous, and finally are arched and pendent, a well-grown plant becomes a mass of verdure. The characteristic leading features of the *Mystaceæ* are, an inferior fruit crowned with the calyx, which becomes a berry, pulpy in most species; many stamens affixed to

the calyx; a single small style, and leaves abounding with dots, which are vesicles or recipients of a terebinthinate essential oil, extremely fragrant in the common myrtle.

In the purple guava, the seeds are imbedded in pulp; they are somewhat kidney-shaped, flattened, with a curved embryo. The rind of the berry resembles in texture the peel of an orange; it abounds in cells, containing an essential oil, which imparts a flavour of resin, that deteriorates the delicacy of the fruity pulp. The berries vary in size, being on young shrubs as large as Morello cherries, though few in number, and frequently dropping off prematurely. Those of larger shrubs are less in size, but much more numerous, and ripen freely.

Psidium is found in the twelfth Linnæan class, *Icosandria monogynia*; the calyx 5 cleft; petals 5; berry inferior, soft, pulpy, many-seeded, cotyledons small, leafy; radicle bowed (*arcuate*); testa hard, and bony.

The purple guava is raised very easily from the seeds of perfect ripe berries, sown with the pulp, but first rubbed up with sand. The soil should be a light, rich loam, made more open with a fourth part of heath-mould, or perfectly decayed leaf soil. I sowed several in January 1833, in a small pot, and produced a dozen or more plants, which in the spring were transferred to small sixties, grew freely, and, by fresh potting, formed healthy and fine plants. Nothing could exceed the beauty of these little guavas as they developed, shoot after shoot, from the base to the top of the main stem, all covered with fine leaves. A stove heat of fifty-five or sixty degrees produces the richest verdure, but the plant is not injured by greenhouse treatment; and, indeed, one shrub, five feet high, growing in a twenty-four pot, ripened several large berries during the rigour of January last; it stood on the floor of a vinery, the angle of the lights of which was forty-four degrees; thus enjoying all the power of the sun, but having scarcely any assistance from fire; on several occasions frost entered the house, but it did not injure one leaf of the shrub.

Having thus described the plant, and proved its hardihood, it is time to mention the important fact to which allusion was made above; it will, I hope, be considered as a *bonne bouche*, literally reserved to the last.

When the vinery was brought into action, the tree grew, and quickly developed a great number of blossoms, very closely resembling those of the myrtle in form, colour, and odour, but rather smaller and more fugacious; a fine crop of fruit, set, swelled freely, and became ripe by the end of September. The flavour was pleasant, but in some degree deteriorated by the oil of the peel. It then occurred that if the berries were digested for some time in water at a heat short of boiling, they would become tender throughout, so that the pulp might be pressed through a cheese-

cloth, which would thus retain the rind and the seeds. This was done; some of the essential oil was expelled by the heat, and that which remained and passed with the pulp was driven off by a subsequent boiling in a small enamelled German saucepan, for about seven minutes, with the requisite quantity of fine loaf sugar. The result was a perfect *Guava jelly*, of the richest mulberry purple, firm elastic texture, and most delicious flavour.

The proportions required are equal weights of the pulp and sugar; but these may be varied according to taste, the security of the process depending upon—1st. The maceration of the berry till softened; and 2nd. The boiling, to get rid of the greater part of the water of the fruit. If the quantity were considerable, this boiling should take place before the sugar were added, as thus the colour would be more perfectly retained. The easy attainment of pure *Guava jelly* is thus established. FLORUS.

THE CHRYSANTHEMUM.

In an earlier part of this work we have given a treatise on the culture of this autumnal flower. We have also laid down for this, as for other flowers, certain conditions on which they are to be considered of value, or otherwise; and since that period there have been many persons interested somewhat more deeply in its culture than they were previously. The present is their season of bloom. Some of the most hardy may, in particular situations, be seen braving the storm, and showing their bright colours amidst the surrounding mass of dead and dying vegetation, but perfection of bloom can only be had in covered habitations, such as pits, greenhouses, conservatories, and dwelling houses. Messrs. Chandler of Vauxhall, and Mr. Henderson of Pine-apple Place, have generally a very fine show during the blooming season, but the former is the most complete Chrysanthemum nursery in or near the metropolis, and at this moment there may be seen at the Vauxhall establishment every variety worth cultivating. At this particular period of the year, when nothing else is to be seen in flower, there is something very charming in a house full of well grown Chrysanthemums. The colours, or rather shades, are very numerous, the figures of the flower vary exceedingly, and the habit of the plant is as much diversified as either. There is also some skill required in growing the Chrysanthemum well. The majority of the plants are naturally tall and ill-shaped; unless properly managed, which management is best explained in our treatise; but the plants at the Vauxhall nursery are dwarf, shrubby, handsome, and well flowered. We recommend those who are near enough to pay a visit, and if they propose to grow any, to mark those they like best, while they show themselves to advantage. The Chrysanthemum is

almost the only flower that makes much of a show in a dwelling-house; and, as the slightest protection is enough to preserve it for a considerable time, they are admirably adapted to the windows of any room, whether there be fire or not. There are but two things to take care of in managing them—one is, to see that they do not want water, and the other is, to see that they have not too much. If they stand in saucers, they ought to be the patent ones already described by us, which keeps the bottom of the pot from touching the water, for the soaking of the roots day after day is sure to cause premature decay of the blooms, if not the death of the plant. This tribe of plants is reasonable enough, for ordinary kinds are as cheap as geraniums, and the novelties in *Chrysanthemums* are much cheaper than new kinds of geraniums.

HINTS.

WHENEVER *Roses* or any other shrubs are infested with blights, take sulphur and tobacco dust in equal proportions, and strew it over the trees in the morning, when the dew is on; and when the insects disappear, then wash the tree with a decoction of Elder leaves.

Whenever you want to raise any plants from cuttings (except those that are perfectly hardy), let there be a mixture of drift sand in the mould, as this will assist their striking, always remembering, that a hand glass put over them will be more likely to ensure success. They should be shaded from the mid-day sun; but the mat should be removed when the sun is off, as they should have plenty of light.

Before you plant *Ranunculuses*, the roots should be laid on a damp flannel to swell; and shake over the bulbs a little dry sand, before they are covered with the mould.

If Greenhouse Plants are in a room, and the weather is very severe, set a pail of water near them at night, or burning two or three rush lights, will often preserve them from frost.

Double *Colchicums* and *Crocuses* should remain in the ground two years.

Old Pink roots best to save seed from.

To drive away Rats, use sulphur steeped in water; and if they or worms infest gravel walks, strew the walks over with salt, and then water them.

TO DESTROY SNAILS.—Place tiles about the garden in a hollow direction. They will get under them in the night, and in the morning you may destroy them.

Remove Rose Trees in February, to make them blow late; or cut some of the buds off, which will answer the same purpose.

When flowers are withering in a flower-vase, plunge about one-third of the stems into boiling water, and by the time the water is cold, they will revive; then cut off the ends, and put them

into cold water with a little nitre, and they will keep fresh for several days.

Hoe and sow in the dry, and plant in the wet; this will generally ensure the crop, and what is planted out will be much more likely to grow.

Shrubs and flowers should never be planted deep, as they will not thrive so well.

Never put plants in too large pots, as they generally run to roots and stalks, but seldom blow well.—[This does not agree with the one-shift system.]

It is a good method to put oyster-shells round the plants in pots in the summer, as they will not require so much water, and will keep the surface cool.

No plants (but especially tender ones) should be watered when the sun is upon them, as it often turns the leaves yellow, and injures the plants.

Water in the evening from the latter end of May to the latter end of August, and afterwards in the morning, as we often have frosts the beginning of September.

In the winter plunge pots up to the rim in tan or ashes to preserve the plants from the frosts.

Hardy Greenhouse Plants should be kept chiefly in the shade during the summer months, but never under the droppings of trees. Air is of consequence to all plants, so that they should be placed where they can have plenty of it, though not so exposed as to be injured by high winds.

Whenever you want to transplant any Flower Roots in the summer season, make it a rule to do it in the cool of the evening, and give them all a little water; if this plan is not adopted, the sun will spoil them.

To destroy Earwigs, place the bowls of tobacco pipes on the tops of the flower-sticks, and you will find them in the morning in the bowl; turn them into a basin of water, and put the bowls on the sticks again.

A SUBSTITUTE FOR BOG EARTH.—Take a quantity of earth from a common about a foot deep with the turf; mix this with rotten dung, part horse and part cow, with a portion of mould from a hollow tree, and a portion of drift sand; let these materials be well mixed together, and lay for several months before it is used, turning it once a week or a fortnight.

The best soil for Carnations and Pinks is a large proportion of good rich loam mixed well with an old melon bed, a little cow dung, and a small portion of drift sand.—*J. Willatt.*

POT CULTURE OF THE GRAPE VINE.

So many people have the means of growing the Vine in pots, that we have innumerable solicitations to give some information on the subject, and wish as far as we can to comply with the request. The newspapers, too, gave us an ac-

count of a superb Vine exhibited at Norwich, which specimen was represented as the most magnificent thing in the room, bearing twelve or thirteen bunches of the most noble berries of black Hamburgh that was ever exhibited. In a voluminous description, which was continued for a long time in the garden periodicals of the period 1837. Mr. Grey, the gardener of Sir M. W. Ridley, Bart., set about proving for his own satisfaction, several of the alleged facts upon which the various writers differed, and from a portion of his writings we learn a good deal. The following, however, is the portion which most affects the practice of growing Vines in pots. Mr. Grey says—

“Mr. Mearns, who was gardener at Welbeck, informed me that the three years old wood of the Vine rooted more freely than wood of any other age; communicating at the same time several other interesting remarks on the Vine, which induced me to give the pot culture of it another fair impartial trial, notwithstanding I had written against and condemned the system. I have a range of flued melon pits here with four divisions; one of the divisions I prepared with tan, or spent bark, for the reception of thirty pots of coiled Vines. In January last I selected prunings—viz., white muscadine, Miller's Burgundy, black cluster, and black Hamburgh; and, agreeably to the hints given by Mr. Mearns, I was careful of having the three years old wood coiled into the pots; the latter end of February being the time that the Vines I had the cuttings taken from had taken their rest, and were coming into action. I then plunged the pots into the pit previously prepared for them, in a mild, growing, bottom heat; taking the sashes off all the day, to keep the shoots above the soil as cool as possible, in order to prevent the eyes from pushing until the bottom heat had put the wood coiled in the pots in action, to push out roots, and support the young shoots and branches. All went on to my wish, as I found, by the time the eyes broke forth into leaves, there were fine vigorous roots in the pots. I then kept the sashes on in the day time, giving air the same as in the forcing-houses: several of them showed fruit, with from four to eleven bunches upon one coiled shoot. The plants which were not fruitful I took out of the pot to give more room and light to those in fruit, and to satisfy myself in the argument regarding the roots pushing only from the eye joints. Mr. Mearns contended that roots issued more freely between the eye joints. I turned the barren plants out of the pots, and found Mr. Mearns had been perfectly correct, as there were plenty of vigorous roots between the eye joints, more so than from the eyes.

The Vines that had bunches on them I kept plunged in the tan bed, where they set their fruit well. The berries swelled to a good size, according to the sorts; and they are now quite ripe; but I am certain not one of the bunches

will be required at my master's table, as I have abundant crops on established Vines in borders, of the Muscat of Alexandria, Frontignan, Hamburgh, &c.; several of the bunches two and three pounds weight, and the berries the size of small plums. I would advise those who have not given the coiling system a trial never to attempt it, as I am certain the best of success will be disappointment to the cultivator, and perhaps insults from the employer.

The shrivelling of grape berries is very important. Several methods have been pointed out for its prevention; yet I never observed the malady decrease. Over-cropping a Vine, a damp bottom, and the foliage being destroyed by red spider, certainly have a tendency to bringing on shrivelling. My opinion, from practical observation is, that light crops suffer most. If the flowers, when coming into blossom, do not expand over all the bunch in less than twenty-four hours (be the crop ever so light), that bunch will shrivel. When Vines expand their blossoms in a lingering state, as a shoulder one day, the other shoulders the next day, and the extremity of the bunch the third day, such bunches are sure to shrivel, as the berries that set first begin to swell immediately, and so keep the lead. They form the seed-stone before the last set berries; and, when swelling off and colouring to maturity the first set berries rob the last set ones, and cause them to shrivel and decay. The best method I ever found to prevent shrivelling is, to keep a high moist heat when the Vines are coming into blossom, so as it may all expand at once; and in thinning to cut out all the small berries, leaving those on the bunch as near a size as possible.”

This coiling system, it must be explained, is taking very long branches from the Vine, and putting it round and round inside the pot, leaving a portion out to grow and give fruit. This it will do the first season; but all the leading cultivators of the Vine in pots prefer growing the plant from single eyes, which are grown into strong wood in the pot, and shifted from one size to another, with the richest compost, plenty of water and heat, and in two years instead of one you may have fruit in abundance, treating the Vine the same as recommended in the Garden Practice.

WHAT ARE THE REQUISITE QUALIFICATIONS FOR A FARM BAILIFF?

THIS is one of the many hundred questions which are put to us upon all kinds of subjects; and as we begin to regret writing long letters to our friends, instead of giving all our readers the benefit of our answers, we shall insert the best answer we can give to this querist. It is the experience of a Kentish farmer; the substance of it was communicated to a particular circle by the Canterbury journal some years ago.

He should be industrious, active, intelligent.

He should be up first in the morning, and last at night.

He should not only order men to their work, but lead the way; and should on all occasions move from one department to another without delay, assisting and directing where requisite, but always keeping the adage in view, the "eyes of a master do more than the hands."

He should be the first power to the machine, and the best implement on the farm, and should assist his master to manage the men, not the men to manage the master.

He should be punctual in his accounts, honest in his dealings, regular in his business.

He should every night note down in a book the operations of the day, the labour of the men, the corn and food consumed by the cattle and horses, the corn bought and sold, and having done this, write down what is required to be performed on the following day on the opposite side, which the next night's account will confirm; he should then inspect the premises—see that all the locks are secure, the cattle safely housed, and retire early to bed, as the only certain step to rising early in the morning.

He, by following these directions, will find next morning no difficulty in carrying out his arrangements, and will learn thereby that method and order are the first principles of action; this will, by his example, be communicated to the whole concern. The workmen will be regular, and even the horses will partake of the benefit; working tools, sacks, and implements will be taken care of, "there will be a place for everything, and everything in its place;" if the articles are lent to others they should be charged to their account, and credit given to them when returned—it is by thus attending to the minutiae of farming matters that the profit is obtained; "take care of the pence, and the pounds will take care of themselves."

He will take care at all times to be prompt and decisive with the workmen, and if they are idle, dissolute, or disorderly, admonish them: if no reform takes place, discharge them.

He will, on the other hand, always treat them with kindness and civility, and will not fail to obtain the same in return—he will never allow his men to indulge in abusive or blasphemous language, or in drunkenness, much less will he ever, by precept, give them encouragement to follow the example, or allow them to suppose he can be guilty of such practices himself, or he will do well to discharge all that are in the continual practice of either.

He will endeavour to pay them fair wages, as the only sure mode to have work well performed, and to encourage his labourers to be honest. He will ascertain what is a fair price for labour by the piece, and give it—if he lowers the price in consequence of their making good earnings, he will, by so doing, check the exertions of the

men, and induce them to cheat him on every occasion, for if men at piece work are not allowed to exceed certain wages weekly, they will always require a great price for their work, which they will, by their duplicity, make him believe is due for their exertions when their labour is but half bestowed.

FLORAL NOTES.

CHORESIMA OVATA.—This is one of the most elegant and delicate looking greenhouse plants we have, and flowers in great abundance with a yellow and red shaded pea flower. Nobody succeeded in growing this plant better than the Duke of Devonshire did at Chatsworth, and Mr. Paxton, in one of his early Numbers of his Magazine, gives the particulars of his practice at some length. He says:—"We select a quantity of peat, carefully avoiding such as does not contain a good deal of fibre, or that has not a considerable portion of white sand equally mixed with it, rejecting as entirely worthless all such as inclines to be stiff or very sandy; to this is added not more than one-fourth of mellow sandy loam; the whole is then examined, and if the grains of sand are found not to touch, or nearly so, throughout the whole, so as to give it a greyish cast, what more sand is thought sufficient is thrown in and properly mixed up. The soil is never sifted, this practice is discarded as taking out the most essential part, namely, the fibre; but after being well broken up with the back and edge of the spade, what lumps remain too large are reduced with the hands. Any soil naturally retentive, or that inclines to become close, is always objectionable for these, and, in short, all hair-rooted plants. Plants, on their first removal after striking, are put into sixty sized pots in the above soil, being very particular in putting no less than two inches good drainage (potsherds) at the bottom of each; they are afterwards removed to the propagating house, being first gently watered with a fine rose; here the atmosphere is congenial to them in this state, and will consequently cause the roots to push, and prepare them for a removal into an atmosphere more suited to their constitution, which should take place in about a week, as the young roots will have taken hold of the new soil. The next situation sought for them is a pit or frame (any aspect), where they can be placed near the glass, and be shaded from the hot sun. During fine weather air should be admitted freely, and the plants carefully, though sufficiently, watered every evening. They are finally placed in the greenhouse, as near the glass as possible; but, if avoidable, never place them opposite the ventilator when the air is admitted, this will prove injurious to them, as the house will require to be freely ventilated: if the air is admitted from the roof they cannot sustain any injury. The house should be shut up in the

evening. As these plants suffer from over-potting, it is necessary here to caution against so dangerous a practice. One thing that greatly accelerates the growth, and tends to ensure success, in cultivating these plants, is to avoid setting the pots where their sides are likely to be dried much by the sun; this practice materially injures the young roots, which always like to be between the side of the pot and the soil, and consequently sickens and weakens the plant. In the nurseries about London they have an excellent practice of substituting for the wooden shelves of the stages slabs of blue slate, which seem to be readily procured of any length, between four and seven feet; this is not only very durable, but has an extremely neat appearance, and is as well a great benefit to the plants, being very comfortable and cool to their roots in hot weather, and less liable to get dry. There is also a practice of laying a little sandy gravel for the pots to stand on; this, when watered a little, retains a degree of moisture, and prevents drought, and consequently the sides of the pots cannot dry; it, moreover, feeds the leaves, and strengthens the whole plant; but when this is practised, it is necessary to observe the strictest caution in watering. The advantages of keeping the floor damp, and employing other materials for that purpose, is only available in summer, and should not therefore be practised in the winter, when the plants are not growing. In the winter, it is not the growth of the plants that is the cultivator's study, it is rather how he shall best keep them alive until the return of the growing season; and, of all to be thought of on this head, perhaps the first and most important is the preservation of their roots; to ensure these, watch hourly against too much moisture arising from over-watering, &c.; take care that the drip does not fall into any of the pots, and in damp weather, or where moisture begins to appear, and to remain long about the pots, on the stages, or on the bottom of the sashes, &c., a very little fire may be applied with advantage in the evening, and in the morning after, if the weather suits, admit a little fresh air for an hour, or according to the state of the weather, carefully and effectually observing to keep out at all times cold winds and frost. Potting is in general looked upon as of minor importance, but the truth is, a badly potted plant, however healthy when shifted, never thrives. It is instructive to turn out the balls of several recently potted plants, and observe where the soil is loose or in holes how it affects their growth; where the soil is compact, and properly put about the roots, the plant will grow freely and root well; but, on the other hand, if the soil is put in loose, or left in holes, the plant never properly thrives, but languishes, and ultimately dies if allowed to remain in that state; it is therefore necessary to place the soil compactly and properly about the roots when potting, never for-

getting to effectually drain every pot, as before directed. The propagation of these plants is a difficulty which every gardener acknowledges and experiences, but even this becomes comparatively easy when steadily and attentively followed up. The few following hints will be useful:—the cuttings should be taken off while the wood is young, and carefully prepared; take off the bottom leaves with a sharp knife, and make a clear cut just through the joint: the cutting pot should be drained and filled to within two inches of the top, with the soil before spoken of, on the top of this put a layer of quite clean white sand, into which plant the cuttings, making a little hole for their reception with a small prepared stick; when the pot is full, give them a steady watering with a fine rose; after which place a clean glass over them. In this state they may be removed to the propagating house, where the temperature should not sink below sixty-five degrees, and plunged into a little saw-dust. They should be effectually shaded from the sun, which can easily be done by placing a sheet of coarse paper between it and the glass inside the house, not, as is usual, on the roof outside. The glass should be wiped quite dry every morning, and the cuttings, when necessary, carefully watered. The object of filling the pot up to within two inches of the top with soil, is to enable the young roots, as soon as they are formed at the bottom of the cuttings, to take off at once into the soil, which greatly strengthens them, and prevents the check which would ensue when potted off, if allowed to form their roots wholly in the sand. Seeds of many of the species ripen in abundance, and as they in general vegetate freely, plants may be readily increased from them. They may be sown in any light soil, carefully avoiding any among which dung is incorporated; placed in a gentle heat, securely shaded from the sun, and judiciously watered, they will come up well; and when four proper leaves are formed they may be potted off in the manner before directed for cuttings.

RHODODENDRON ARBOREUM.—The soil should be varied according to the size of the plants. Seedling plants grow best if potted in very sandy peat; as the plant progresses a little loam should from time to time be added, until the plant is about five or six feet high, more loam should be used at each shifting; when the plants attain a large size, equal parts of loam and peat may be used; by strict attention to the above directions, and supplying the plant plentifully with water during the growing season, fine healthy blooming plants will be the result. It is much to be regretted that so fine an object should not be hardy enough to grow in the open air, but from repeated trials, which have failed in various parts of the country, we are fearful this desirable object will never be attained, Numberless beautiful varieties have been raised.

some almost as handsome as the parent itself; most of the crosses have been between this species and *Rhododendron Ponticum*; these varieties are quite hardy, but they bloom rather early to be seen in high perfection in the open air. Mr. Burn, gardener to Lord Aylesbury, has directed his attention with great success to hybridize between *R. Arboreum* and *R. Maximum*. The consequence is, he has raised a most beautiful variety, which flowers later than those raised by *R. Ponticum*. In a few years we may expect to see numberless beautiful varieties of this noble species growing in every common garden.—*Paxton*.

[The time has arrived, and among other colours we have a splendid yellow.]

FUCHSIAS.—The beautiful family of Fuchsia has now extended widely. During many years, the old scarlet (*F. Coccinea*), the nursling of the late Mr. Lee, whereto, by the bye, "hangs a tale," was the only cultivated species. It is now rarely seen, though the loss is to be lamented, as it grows luxuriantly, beyond belief, in what is called a peat border; that is, a bed of heath soil, abounding with vegetable mould. The species—*gracilis*, *virgata*, and *conica*—flourish in the open air during summer; but the one last-named suffers instantly from a slight access of frost. *Globosa*, *microphylla*, the *tennella* (a variety of *gracilis*, perhaps), *Thompsonia*, and the newly-introduced or hybridized varieties, have not been sufficiently proved in the gardens. However, one species will serve our purpose. *Gracilis* is known to succeed well, but *virgata* is the species to plant out in masses or clumps, wherein, if the soil be a rich mould—i. e., one composed of two-thirds decayed leaves, one-third soft mellow loam, and one-third white silicious sand—it will produce luxuriant shoots in abundance, clothed with handsome foliage, and a profusion of large and most brilliant flowers. It will stand the winter with a little protection; and this it should receive—not from a covering of mats—but from a quantity of the siftings of half-decayed leaves of the forcing pits. Let the twigs be cut to within three inches of the surface, as soon as the first frosts shall have affected the leaves; then throw over each plant (or, if there be plenty, over the whole clump) a six-inch layer of the siftings of leaves. At the return of spring dig the bed, and the vegetable matter will then prove a most appropriate manure. *F. Conica*, instead of being cut back, may be laid down the whole length of the stem, in a trench four inches deep; after which, a similar covering of leaf siftings will effectually protect it. A plant so laid, when raised to the perpendicular in the following April, has been seen breaking into hundreds of white germs of shoots, which quickly assumed the green tint, and subsequently became graceful flowering branches. This, we believe, is the Welbeck practice. At all events, when flowering shrubs

die down, the simplest mode of protection is to be found in a deep covering of decayed leaves. Mats carefully applied, preserve the permanent stems and branches of tender shrubs. In this way, without removing the cover, a fine *Pittosporum* was maintained in health throughout the winter of 1836-7.—*T*.

HYDRANGEA.—Last August I took cuttings from plants that had lived through the winter with us, about six inches in length. They were planted under a hand glass, in a mixture of loam, leaf mould, and sand, in a shady situation, and well watered to settle the soil. The hand glass ought not to be removed, except to clear the plants from weeds and decayed foliage, until the beginning of October, when they will be well rooted. I pot them in sixties. Give them an airy situation through the winter. If they are kept in a temperature from 40 to 50 deg. so much the better. About the first week in February I select the strongest plants, and place them near the glass in a pine pit: this excites them to grow, and then it is perceptible which will flower. I then pot them in thirty-two's. Place them in the pine-stove again, near the glass, with a feeder of water under them, until the petals are partly expanded, and begin to assume their colours. I then harden the plants by degrees, until they will stand the air of the greenhouse, where they will exhibit a striking appearance, and continue in flower for months. There are plants here which have stood in the open border for years, but are usually killed to the ground by the winter's frost. They will always grow again from the root the following summer. While this is the case here, a neighbour of mine, less than half a mile distant, has three plants which have attained the height of four feet. They flower freely, and scarcely suffer from frost. The colour of the flowers is a fine blue, which leads me to think they resist the cold better by showing this colour. The soil in which these plants grow so luxuriantly is of a dark colour, and was formerly a coal field, and small pieces of coal are still found mixed with the soil. It would appear that the spongiules of the plant, by which its nutriment is drawn into its system, is there retained. For example, I took some cuttings of *Hydrangea* plants last August, and struck them in the compost alluded to above; I then potted them in three parts red loam, the remaining part rotten manure and leaf mould. The result was, that the cuttings taken from my neighbour's plants produced blue flowers, whilst the cuttings taken from my own plant were of a pink, or rose colour. Both were grown in the same soil, temperature, &c., and in every way treated alike.—*W. Brown*.

[We have planted cuttings from the same plant in ordinary loam borders, and among the Americans in the peat bed. The former came pink, the latter blue.—*ED.*]

STRELITZIA REGINA.—We have in an earlier part of the volume given a sketch, and a slight description of this showy stove plant, but as many wish to see the form of that plant we subjoin it.

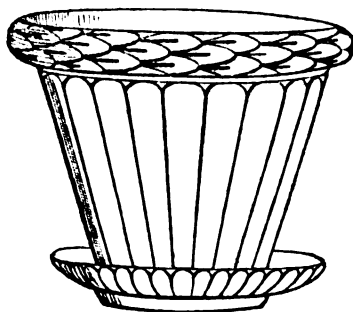


This plant is best when allowed to spread and fill a large pot with its roots, as, when once established with five or six hearts to it, there will be almost always some one or other in bloom. It may take its chance in the ordinary stove or vinery, or any other house warmer than a greenhouse.

THE COCKSCOMB.—I make the first sowing of seeds about the 1st of April, and the second towards the middle of May, for a later succession. The soil I use is a mixture of loam, leaf mould, and sand, about equal parts of each; the seeds are covered half an inch deep with the same mould, finely sifted, made smooth, pressed gently down, and then watered. They are then, when the first rough leaf appears, about the size of a sixpence, potted off, using what are called small sixties (three inches diameter), with two plants in each pot, at opposite sides, covering the whole of the stem, that the cotyledon appears but just above the soil. They are then gently watered with a fine rosed watering pot, and placed in a melon or cucumber frame, where they remain till the roots have partially surrounded the bole of earth, when they are again shifted into single pots, about four inches diameter, still using the same soil; they are again placed in the frame, and treated as before, keeping the soil at all times moist. They are thus treated, shifting them at various intervals, as the roots appear to require it, keeping them in the frame as long as possible, as they will thrive better there than elsewhere, and if managed as directed above, they will require pots ten to twelve inches diameter, and if the combs are of a good kind, they will measure the longest way nine, ten, and some twelve inches across. I have also found recent horse droppings, when mixed with the soil about three weeks before using, to be a very excellent compost, and with this

I have grown larger combs than with any other compost I have tried. When the plants have attained their full growth, or nearly so, they are then removed to the shelves of the greenhouse, and placed among other tender annuals, where they present a peculiar and interesting appearance.—*Marnock.*

FANCY FLOWER POTS.—These are now being made of any material, but the china ones are the most in request for drawing-rooms. At most of the china and glass warehouses they have handsomely got up flower pots of every shape and fashion; but if a pot must be any thing besides the ordinary red ware, it is better to have something showy at once. The following would look well whether made of the coarse or fine red ware, or china, and would not be dear.



THE AMARYLLIS.—This very pretty tribe of plants cannot be well managed without heat, but I have flowered many a fine one in the same hot bed that was in use for striking my Dahlias. The following is a very fair estimate of what they require. I am aware that some of the kinds may be flowered in an ordinary greenhouse, but I find they do better by placing them on the front flue of a vinery. From the 1st of April, the time they are brought into the grapery, they are kept in an increasing temperature, gradually rising from 50 deg. Fahrenheit to 60 during the night. They remain in the vinery till about Midsummer. They are at first freely supplied with water, and this is continued throughout their flowering season, generally April and May, and still further on, so long as the foliage appears to be in a rapidly growing state. In reference to this particular, some experience is necessary; for most of the kinds will continue to grow, more or less, so long as water is supplied to them. It will, however, be generally found, that if the bulbs have been in a dormant state from Midsummer of the preceding year, they will commence growing freely when taken into the vinery, and the foliage will be fully matured by the end of June or July; and even previous to this time, it will generally be advisable considerably to lessen their daily supply of water. About this time I

place them close together on a shelf in some airy and dry part of the grapery, where they are at the same time exposed as much as possible to the full influence of the sun. In this situation they remain till the grapes are matured and cut, and the house thrown open to the action of the weather, for the purpose of wintering the vines. The bulbs are of course allowed to become gradually dry, and the foliage entirely decayed. They are then removed to a dry shade, beyond the reach of frost, and where they are quite free from damp. A little dry litter is thrown over them, if necessary, in very frosty weather. I have sometimes taken them out of the pots, shaken the whole of the earth from their roots, and tied the labels to the bulbs. In this way they require much less room, and may be preserved from the frost with less trouble than when kept in the pots; but I prefer keeping them in the pots with the earth about their roots, believing that in this way they flower more vigorously. When the forcing of the vines is again commenced, and the temperature has been raised to about 50 deg. at night, the bulbs are then all looked over, and carefully potted. The soil I use is composed of two parts yellow loam, one of clear white sand, and one of well decomposed leaf mould. The pots are from five to six inches diameter. They are at first very sparingly watered, and this caution ought to be particularly attended to until they have begun to root freely. Nothing is more prejudicial to these bulbs than to keep the soil in which they are placed continually saturated with wet. Whenever this is the case, it is ten to one but the roots are rotted as soon as they make an effort to establish themselves in the soil, and will scarcely ever thrive until they have been placed in fresh soil. When they are in flower they may be removed to the conservatory or dwelling-house, but they must not stand in pans of water, the soaking of the roots would rot them. Those who have only a common hot bed, must see that they have the same degrees of heat that are recommended.

CULTURE OF TELOPEA SPECIOSISSIMA.—Perhaps this plant may be set down as one of the most lovely that was ever introduced into our greenhouses, whether we take into account its splendid scarlet blossoms, or its fine upright growth; like most of the *Proteaceæ*, it is very liable to perish from many causes, and is therefore remarkably scarce, being found in very few collections, and in those few seldom growing in perfection. This deficiency probably arises from too cold an atmosphere in winter, or too much or too little water at any time. To cultivate it successfully, attend to the following rules:—

First. Pot the plant in a mixture of equal parts, very sandy, heath mould, light loam, and leaf mould; if the mould cannot be obtained

very sandy, a portion of sand must be added to it.

Second. Always be careful to fill about one-third of each pot with broken potsherds, to prevent the soil from ever becoming too sodden.

Third. Drought is as injurious to this plant as too much moisture, therefore, by no means ever allow it to flag for want of water; during summer a good deal of attention is required, particularly as it always locates in an airy situation; a good plan to prevent any evil effects is, at the time of potting, to mix some pieces of coarse soft freestone, broken to about an inch diameter, with the soil; after Mr. M'Nab's plan, these stones retain the moisture longer than the earth, and when the roots have once grown about them, they will derive sufficient nourishment to prevent the plant drooping much longer than it otherwise would; and in winter they keep the passage through the soil more open for the escape of the water.

Fourth. Never water at the roots, except the soil in the pot appears dry, for if overwatered in winter it is inevitably destroyed, and in summer is almost sure to be seriously injured.

Fifth. Always place the plant in a dry airy part of the greenhouse, where it will not be smothered by other plants, as nothing spoils the foliage more than too close confinement of this kind.

Sixth. Propagation.—It is propagated by cuttings, which should be made of the ripe wood taken off from the extremities of the branches, just at the close of winter, and planted in sand, and covered with a glass.

Seventh. Make no cutting of less length than an inch and a half, take them off at a joint, cut the bottom smooth with a very sharp knife, and take off the leaves from that part to be inserted in the sand, but leave every other leaf entire.

Eighth. In preparing the cutting pots, fill them nearly three parts full of potsherds, the upper ones broken fine; on this bed of drainage lay as much fine sand as will fill the pot level, insert the cuttings deep enough to reach just through the sand, and rest upon the fine potsherds. This system is advantageous for three reasons: first, because there can be no possible stagnation of water, which, to a cutting, would be immediate death; secondly, because the bottoms of the cuttings coming in contact with the broken potsherds, they derive a degree of moisture in so gradual a manner, as to greatly facilitate their striking, just by the same rule that a cutting planted close to the edge of a pot strikes root much sooner than another planted in the middle of the same pot, and subjected precisely to the same treatment; and thirdly, because, at the time of potting, the tender roots are more readily taken up without breaking, than they would be if allowed to enter into soil, and go to the bottom of the pot.

Ninth. Plant the cuttings an inch apart,

gently water them, but not over the leaves, and when the water has a little dried up, place on the glasses, and set them in a warm but dry place, and never plunge them, or you are sure to lose them. The nearer they stand to the glass the more perfect will be the success.

Tenth. Take off the glasses every day to allow all damp to dry up, and always be careful after wiping the glasses dry to place them on perfectly air-tight.

Eleventh. Shade, during sunshine, for the first fortnight, by placing a sheet of paper over the glasses; but afterwards they will require no shading, except the sun be very warm.

Twelfth. As soon as they have made good roots, pot them off in small pots; if this is not speedily done, they will lose their leaves by being so long confined, and may probably all die.

Thirteenth. When potted, place them in the stove for a week or two, until they begin to grow again, when they may be gradually exposed, until they will bear to be removed to the greenhouse, where they may be treated as old plants.

Fourteenth. To grow seedlings, sow the seed in spring in light soil, and as soon as they are up pot them into small pots, and treat them as cuttings.—*Paxton.*

RENANTHERA COCCINEA—CHINESE SCARLET-FLOWERED AIR PLANT.—The merits of this magnificent plant were for a long time only known from the statement of a few individuals who travelled into China, together with a figure in the possession of the London Horticultural Society, and some remarks in the work of Loureiro, a missionary, published in 1790; until a few years ago, a plant flowered in the gardens at Claremont, from which a beautiful drawing was made for, and inserted in, the Botanical Register. The species had been at different times imported from China, and recognised amongst orchideous plants for its long leafy stems and fleshy veinless leaves; and from the peculiarity natural to all epiphytes, of attaching itself to damp or dry walls, pieces of wood, or any other body within reach of its long fleshy tortuous roots. A long time elapsed, after it had become general in collections, before a correct notion could be formed of the beauty of the flowers, or the precise nature of the inflorescence. The reports of all travellers who had seen the flowers, allowed them to surpass almost every other vegetable product known. Dr. Lindley observes, in the Botanical Register, when speaking of this plant, that "The cause of previous want of success in inducing it to flower, has resided in its having been cultivated in too dry an atmosphere. Mr. Fairbairn, gardener to His Royal Highness Prince Leopold, at Claremont, impressed with this opinion, tried the effect of tying moss around the stems, and keeping it constantly damp, exposed as much as possible to the influence of the sun; with what success his experiment has been rewarded, appears from the

accompanying representation of a portion of a panicle, two and a half feet long, which was finally produced in the hothouse at Claremont, in October, 1827."—See Bot. Reg., Vol. 14, t. 1131. Now it appears to us, that a mistake has arisen as to the real cause of its flowering. In this we are well supported by the fact of the plant having rarely—we might almost say never—produced flowers in those collections where great moisture is kept up during the whole of the season. At Wentworth, under the superior treatment of Mr. Cooper, the species has flowered several successive years, and it is well known, that that intelligent cultivator never washes his plants over head, nor keeps up amongst them a heavy moist heat. The plan we adopted with the plant that flowered at Chatsworth, and of which our present figure represents a portion, was as follows:—About April, 1836, we had a plant put into a small house appropriated to the growth of a few stove plants, in which the heat varied from sixty-five to seventy degrees; it was kept free from moisture, except what rose from watering and occasional syringing.

Here the whole of the plant was exposed to the direct rays of the sun, and, as might be expected, this treatment caused the leaves slightly to shrivel, as well as turn a little yellow, but, by occasionally washing them over in the afternoon with the syringe, the plant did not suffer much; after it had been exposed in this situation for three months, we had the satisfaction of seeing two fine spikes of flowers pushing forth, one of which came to maturity. We have little doubt, if proper attention is paid to placing the plant well up to the glass, and without the use of shade, that a flower bud will soon make its appearance on a well established plant; it is necessary here to observe, that the plant ought to be six or eight feet high before this experiment is attempted. It is no wonder that the Chinese take pride in suspending from the ceiling of their rooms many of this interesting tribe, in coarsely wrought wooden baskets, some for the sake of their magnificent flowers, and others for their delightful fragrance. The plant at Chatsworth, when in flower, was truly splendid, but scarcely fragrant, and being placed in the cool end of the Orchidæ house it continued beautiful for nearly four months; and there is no reason to doubt, if the plant had been placed in a light situation, in a much cooler house, or even in the drawing-room, but that the flowers would have continued perfect nearly as long. It will succeed well in peat mixed with reduced potsherds, if placed carefully about the roots so as to ensure a safe drainage, or in *sphagnum* or *hypnum* moss cut short and packed closely about the roots. Young growing plants will not succeed better in any place than where a strong heat and an abundance of moisture is kept up; any of the young branches taken off and potted in moss, will soon make young plants. The accompany-

ing wood-cut is a diminished representation of the plant, showing the mode of growth, and situation of the flower spike. In the woods in Cochin China, it is found growing on trees. The generic name *Renanthera*, says Mr. Loudon, is contrived by Loureiro, to express the kidney form or reniform shape of the pollen masses. The specific name, *coccinea*, signifies scarlet, or carmine, slightly tinged with yellow.—*Mag. of Bot.*

CHRYSANTHEMUMS have long been considered a great ornament to the conservatory; and their beautiful blossoms are frequently brought to great perfection, though we never see what may be considered as a handsome plant; and we never shall, till the old system of growing the plants in pots the whole year round is done away with. I have given my plan two years' trial; and can, with confidence, recommend it as a great and decided improvement. In the month of April, I take as many suckers of each sort as are wanting, and I plant them out, in good prepared ground, about two feet apart. As soon as they begin to grow I top them, and continue doing so with each succeeding growth, until they begin to assume a shrubby appearance; not staking them, but allowing them to grow at pleasure. If a succession of plants is wanting to blossom very late, or rather in the commencement of the year, I keep topping a few on purpose; and, in dry weather, I water them, from a pump I have got fixed in our new melon ground, with the drainings of all the manure; this is the very essence, and no gardener should lose it. On the 1st of September, I pot my late chrysanthemums into thirty-twos, and start them, by putting them into a close house for about seven days, until they have made young roots; not allowing the sun to shine upon them, and syringing them twice a day. Our chrysanthemums, this season, are very fine; the plants that stand in front of our conservatory had scarcely lost a leaf on the 5th of December, and about forty of them had not opened all their flowers.—*Loudon.*

ERYTHRINA CRISTA-GALLI.—Plants should only be shifted when the roots begin to thicken on the ball of earth; and if free growing kinds are attended to in this way, some will require shifting many times in the course of one season, and it is only by treatment of this kind that they can be grown to perfection. The *Erythrina* is readily propagated by taking off the young shoots with a heel of old wood when about three or four inches in length, and inserting them in a pot of white sand, which ought to be covered with a bell glass, and placed in a moist heat. They require two or three years to attain sufficient size and strength to flower vigorously; but strong plants of that age, or upwards, when potted in rich mellow loam mixed with a little decayed leaf mould, sand, and peat earth, and kept in a moist heat, from 60 to 70

degrees Fahrenheit, the stems will often attain the height of seven or eight feet, and be covered three-fourths of that height with flowers of the deepest scarlet. Although this plant is usually cultivated in the stove, where it certainly will grow to the greatest perfection, it will also flower in the greenhouse, or even out of doors under shelter of a south wall—*A. Anderson.*

SINGULAR ZOOPHYTE, OR ANIMAL FLOWER.—In a large cavern on the sea-coast of the Island of Saint Lucia, there is a large basin about twelve or fifteen feet deep: the water is brackish, and the bottom consists of rocks, from which substances are constantly ascending, which, at first sight, resemble beautiful flowers, having very much the appearance of *marigolds*, but of a much more bright and glaring colour. At the approach of the hand, however, or of any instrument, these apparent flowers retire like snails, and take refuge in the interstices of the rocks. On close observation, four filaments of a brown colour are perceptible, something similar to the legs of a spider; these antennæ, which move rapidly round a kind of petal, are armed with pincers to seize any prey that may present itself within their reach; and no sooner is the same seized, than the yellow flower closes, and prevents the escape of the object which it has thus grasped. Beneath the flower is a brown coloured stem. These Zoophytes, which appear to feed upon the spawn of fish and water, insects of all sorts, are likewise found of almost all colours in the Northern Seas during the summer. They lose their beauty when taken, and produce blisters on the hands of those who touch them.

WHAT OUGHT A FIRST-RATE FUCHSIA TO BE?

THIS has been partly explained. The form of *Globosa*, the size of a cherry, the colour of a scarlet geranium outside, the corolla dark blue or purple, the sepals ought to turn up wrong side outwards, like a Turk's cap Lily, the corolla hang down like a close roll of velvet, the pistil and stamens hang down prominently,—and this would be a fine Fuchsia. Another variety might have a blue corolla, the colour of the *Nemophylla*. A Fuchsia of the same form, with sepals as white as a snow-drop, corolla dark, and another with corolla light, a third with scarlet corolla, and a fourth with an orange one,—and here we should have six real good Fuchsias all different. But there might be twenty varieties of as many different forms, and all might have some point of excellence. It is by no means difficult to conceive many varieties that would be very conspicuous and very acceptable. The greatest drawback upon many of these plants is the want of contrast between the sepals and corolla. The sameness to one another, the coarseness and raggedness of the flower, and the awkwardness of the habit, all of which has arisen

from the raisers of seedlings making the coarse varieties produce the seed instead of the fine ones; instead of impregnating the more beautiful of the globe varieties with the Fulgens and others, they have saved seed from the coarse large varieties, and had their labour for nothing—that is, they have produced nothing worth keeping. We have disputed upon the subject of Fuchsias with a very great authority, and we have attempted to defend the venders of a flower, who, we considered, having done all that was necessary towards ascertaining if his variety was fit to go out, was fully justified in letting it out upon such an authority; but, although that authority says it was one of the best varieties we have, we have denounced it as one of the most worthless that has been let out, and the subsequent attempts to keep up a fictitious character by prostituting one of the Society's prizes, has met with the universal condemnation of the florists of the whole country. The sooner people confine their seedling to the finest of the *Globosa* kinds, the sooner will there be a manifest advance in the flower—as it is, if the growers continue to seed from the coarse ones we shall go back.

SOILS AND THEIR PROPERTIES.

SOILS may be distinguished from one another:—

1st. By their texture, in which case they may be divided into two classes,—1st, the stiff, denominated clay; 2nd, the light or free, comprehending the peaty.

2nd. By their fertility, or power of producing useful plants, in which case they are termed rich or poor.

Soils may be farther distinguished by their general relation to moisture. When water, from any cause, is generally abundant, the soil may be termed wet; when there is habitual deficiency of water, they may be termed dry.

Subsoils are distinguished from soils, properly so termed, by the absence of mould. Plants in growing may extend their roots into the subsoil, and decomposing there, be mixed with it. But this is in small quantity, and, for the most part, the subsoil is readily distinguished by the eye from the upper stratum or soil, by the absence of organic matter in a decomposed or decomposing state.

Subsoils may either consist of loose earthy matter like the soil, or they may consist of rock; subsoils, therefore, may be divided into two classes, the rocky and the earthy.

When the soil rests directly upon, and extends to the rock, without any intervening matter, the soil will frequently be found to be similar in the composition of its mineral parts to the rock upon which it rests, from having been formed by the gradual disintegration of that rock. This is chiefly found to be the case with

the soils of mountains; for, in plains, the soil is generally formed, not by the disintegration and decomposition of the rock upon which it rests, but by the intermixing together of the disintegrated parts of different rocks and mineral strata.

The rocky subsoils consist of granite, sandstone, limestone, chalk, and the other mountain rocks of a country. They are sometimes easily penetrated by the water that falls upon the soil, and are then termed free or porous; and sometimes they resist the percolation of water, when they are termed close or retentive.

The earthy subsoils may, in like manner, be divided into the close or retentive, and the free or porous. The retentive are those which, from containing much clay, are tenacious and cohesive in their parts, and little pervious to fluids; the porous are those which, having less clay in the composition, are more readily permeable.

Whether the subsoil be retentive or porous, the soil which rests upon it should be of good depth. If the soil be shallow on a retentive subsoil, it is affected too greatly by the alternations of dryness and moisture. And if, again, a shallow soil rests on a porous subsoil, the moisture of the soil is too easily acted upon and exhausted by heat.

A subsoil, in so far as mere texture is concerned, should be neither too retentive nor too porous. But, although this intermediate condition is in most cases the best, yet in a very cold and moist country, a free porous subsoil is for the most part to be preferred to one which is close and retentive.

If the subsoil be rocky, it is desirable that it be calcareous rather than siliceous chalk or limestone, for example, rather than quartz. Sometimes the subsoil contains matter which is directly injurious to the growth of plants. This matter is generally found to be the oxides of metals in combination with acids. Subsoils of this kind are usually distinguished by deepness of colour.

Soils, then, it is seen, are affected in their properties, not only by their own texture and composition, but by the texture and composition of the subsoil; and they are divided into the stiff or clayey, and the light or free.

The clayey soils have as their distinguishing character the adhesiveness of their parts; and this property alone will enable even the inexperienced to discriminate them. On account of the tenacity of such soils they are tilled with more difficulty than the freer soils. They require to fertilise them a larger proportion of manures; but they retain the effects of these manures for a longer time. They are better suited to the cultivation of plants with fibrous than with fleshy roots or tubers.

Soils of this class, as of every other, possess many degrees of natural fertility. The poor clays form, for the most part, an unprofitable

soil, because, while their powers of production are inconsiderable, the expenses of tilling them are large. They are termed, by not an improper figure, *cold* soils; and sometimes they are classed under the general name *moor*, which term is often used to denote soils, whatever be their nature, of a low degree of fertility.

Very different in their value and nature are the richer clays. These bear weighty crops of all the cultivated kinds of corn, they do not excel the better soils of other classes so greatly in the production of oats, and still less in that of barley, in which the lighter loams may surpass them; but they are unequalled for the production of wheat, and, in many places, derive their descriptive appellation from that circumstance, being termed *wheat* soils.

Clays, like the other soils, approach to their most perfect condition as they advance to that state which has been termed *loam*. The effect of judicious tillage, and of the application of manures, is to improve the texture of such soils, as well as to enrich them. Thus, clays in the neighbourhood of cities become dark in their colour, and less cohesive in their texture, from the mixture of animal and vegetable matter, and thence acquire the properties of the most valued soils of their class.

Natural changes, however, yet more than art, have furnished the rich soils of clay. The best, for the most part, of the soils of clay, are those which are formed from the alluvial depositions of rivers or the sea. The finest natural sorts of this and other countries are those which are thus formed. The depositions of rivers, indeed, are not always of a clayey nature. In mountainous districts they generally form soils of the lighter kinds. Where the sea, however, is the agent, or where both the rivers and the tides combine their action, the depositions generally partake of the nature of clay. Such alluvial soils have every where local terms to mark their character and fertility. On the great rivers and estuaries in England, and in what are termed *carses* in Scotland, fine and extensive districts of this kind exist.

The next class of soils is the light or free. These are readily distinguished from the last by their smaller degree of tenacity. They are less suited for the production of wheat and beans than the clays, but they are better suited for the production of plants cultivated for their roots, as the turnip and the potato.

This class of soils may be divided into two kinds, or sub-classes, differing from each other in certain characters, but agreeing in the common property of being less tenacious in their parts than the clays.

The first of these sub-classes of the lighter soils has been termed the sandy.

The sandy soils are of all the degrees, from barrenness to fertility. When wholly without cohesion in their parts, they are altogether

barren, and are only rendered productive by admixture of other substances.

But sand, without losing its distinctive character as a soil, may possess a greater cohesiveness in its particles, and be fertile by nature, or rendered so by art; and then the soil is denominated sandy, become of deserved estimation. Rich sands are early in maturing the cultivated plants, and thence they are familiarly termed kindly soils. They are fit for the production of every kind of herbage and grain. But their distinguishing character is their peculiar adaptation to the raising of the plants cultivated for their roots and tubers.

The next division of the lighter soils, and allied in character to the sandy, is the gravelly.

Sands will frequently be found to be the production of flat countries; gravels of the mountainous and rocky. The characteristic of the gravelly soils is the quantity of loose stones which they contain. These stones will be found to consist of those varieties of rock which the mountains of the country afford; and the nature of these rocks will frequently indicate the characters of the soil; thus, soils, of which the stony matter is very silicious, are generally found to be barren, while those of which it is calcareous, are found to be fertile.

Sands, upon examination, will be found to consist of small particles of stony matter, and thus sands may be said to differ from gravels only in the more minute division of their parts. Yet in this minuteness of division there is generally sufficient to distinguish the two kinds of soil. The stony matter of the sand forms its principal component part, while the larger stones in the gravel, which give to it its name and character, seem only to be mixed with the other necessary parts of the soil. The stone of the one has undergone a considerable mechanical division, while much of that of the other has only been loosened in sensible masses from its native bed. Any light soil, mixed with a sufficient portion of stones, is gravel, and gravel, therefore, is nothing else than the different kinds of light soil, mixed with a greater or less proportion of stones.

Gravels, like sands, have all the gradations of quality, from fertility to barrenness. The loose soils of this nature, in which the undecomposed material is great, and the intervening soil silicious, are held to be the worst of their kind. These are in some places termed *hungry* gravels, not only to denote their poverty, but their tendency to devour, as it were, manure, without any corresponding nourishment to themselves. As the texture and quality of the intervening earth improve, so does the quality of the entire soil; and gravels, like sands and clays, advancing through all the intermediate degrees, may become at last of great fertility.

The rich gravels will produce all the cultivated kinds of grain. Their looser texture

renders them less suited than the clays to the growth of wheat and beans; but they are admirably adapted to the growth of barley and oats. They are quick in their powers of producing vegetation; and from this quality they are in some places termed *sharp* or quick soils. Gravels, like sands, are suited to the culture of the different kinds of plants raised for their roots and tubers; and they are in so peculiar a degree suited to the growth of turnips, that, in some parts, they receive the distinguished appellation of *turnip* soils.

The last division of the lighter soils consists of those termed peaty. The matter of the soils of this class is dark in colour, spongy in its texture, and full of the stems and other parts of plants, either entire, or in a state of partial decay. It is generally tough and elastic, and when dried loses greatly of its weight, and becomes inflammable. These, the most observable characteristics of the soil termed peaty, will distinguish them in their natural state from every other.

Peat, it has been said, consists of vegetable matter which has undergone a peculiar change. Under a degree of temperature not sufficiently great to decompose the plants that have sprung up upon the surface, these plants accumulate; and, aided by a certain degree of humidity, are converted into peat, which is either found in strata upon the surface of plains, or accumulated in great beds on the tops and acclivities of mountains, or in valleys, hollows, and ravines. Successive layers of plants being added to the mass, it continues to increase, under circumstances favourable to its production. Water is a necessary agent in its formation, and we may believe, too, a peculiar temperature, since it is only in the cold and temperate, and not in the warmer regions of the earth, that it is found to be produced. The plants which form it have not entirely decayed, but still retain their fibrous texture; and from the action of certain natural agents, have acquired properties altogether distinct from those which, in their former condition they were possessed of. They have now formed a spongy elastic inflammable body, and as different from the common matter of vegetables as to be highly antiseptic.

The plants, whose progress towards decomposition has been thus arrested, are various. Over the greater part of the surface of the primary and transition districts of colder countries, the peat is chiefly formed of mosses and other cryptogamic plants, mixed with the heaths and other plants which had grown along with it. Sometimes the peat has been found in swamps and lakes, and at other times the humidity of the climate has been sufficient to form it in one continued bed, covering the whole surface of the country.

Of the heaths which enter into the composition of peat, that hardy species the common

ling, *Calluna vulgaris*, is the native inhabitant of the alpine countries of northern Europe, and grows in vigour, and overspreads the surface, where hardly any of the larger plants would live. But although this and other species of heath are very generally converted into peat, this is not necessarily or universally so. By the growth and decay of the roots and stems, a soil is indeed formed; but then this may take place in the same manner as in other soils, and without the actual conversion of the upper stratum into peat. In the cases in which these plants are not converted into peat, a dry and turfy soil is formed, different in aspect from that formed by the gramineous and other easily decomposed plants, but still produced in the same manner, though, like the peaty soils, elastic and inflammable, on account of the great quantity of ligneous matter in its composition.—The soil itself is generally thin, and little favourable to vegetation. It usually rests upon a subsoil of silicious sand, and sometimes chalk, and then it is comprehended under the class of soils termed light.

The soil formed of peat would, from its vegetable composition, seem to contain within it the necessary elements of fertility, and yet this is not found to be so. The excess of vegetable matter which it contains is injurious rather than useful. In this state of nature it is often found to be as barren as the sand of the desert, and scarcely to deserve the name of soil, until the labour of art has been extended to its improvement, and even then it is not entirely divested of its original characters.

The effect of a thorough draining off of the water of peat, continued for a long time, is to carry away the antiseptic matter which it contains. When the water of peat has ceased to be turbid, and comes off clear, then we have the assurance that the peat is freed of the principles injurious to vegetation. This is the greatest improvement of which peat is susceptible, and when we have brought it to this condition, the main difficulty of improving it has ceased.

Peat may then be brought to the state of what has been termed loam. In this ameliorated condition it becomes a soil of the lighter kind, well suited to the culture of the larger rooted plants. It is dark in its colour, like the richest vegetable loam, and to the inexperienced eye may pass as such.—But still, unless greatly corrected in its texture by the application of the earths, it is found to be porous and loose, too quickly saturated with moisture, and too easily freed from it. In this improved condition it will yield bulky crops of oats and barley, although the quantity of the grain will not always correspond with the weight of the stem, nor the quality of the grain with its quantity.

Soils, then, we have seen, may be distinguished according to their texture and constitution, when they may be divided into two classes—the stiff or strong, denominated clays—the light or free,

subdivided into the sandy, gravelly, and peaty; and all these, again, may be distinguished,

1st.—According to the powers of production, when they are termed rich or poor; and

2nd.—According to their habitual relation with respect to moisture, when they are termed wet or dry.

Though soils are thus distinguished by external characters, they pass into each other by such gradations, that it is often difficult to say to what class they belong. These intermediate soils, too, are the most numerous class in all countries. The soils termed peaty, indeed, form a peculiar class, always marked by distinctive characters; but even these, when mixed with other substances, pass into the earthy soils, by imperceptible gradations. We may say, therefore, that the greater part of soil consists of an intermediate class, and that it is often difficult to bring them under any division, derived from their texture alone.

PUBLIC GARDENS AND PARKS.

WE believe we may thank the Gardeners' Gazette for all the improvement at Kew, and may take some credit to ourselves for those at Kensington Gardens. We have laboured hard to enforce the necessity of providing for the million that rational and wholesome means of enjoyment—a garden. We have already said, and we repeat it, the poor, and those some little below the middle classes, pay enormous taxation, and while millions are expended in many ways which they cannot by possibility participate in, some thousands might be expended in giving the parks the attributes of gardens, that the public might enjoy a luxury which would be otherwise beyond their reach. We think the improvement in Kensington Gardens a boon; the plantations in the park were also gratifying improvements, and the more nearly our public parks can be assimilated to the domain of a private gentleman, the more acceptable will it be to hundreds of thousands, who, but for such step, would be strange to the quiet enjoyment of a well kept garden. The gratification of the humble classes has too long been a secondary object. Secondary did we say! We might have said, had never been an object; on the contrary, those pleasures which, however questionable as to their effects, were within reach, such as fairs, have been gradually lessened without any substitute having been provided, and it is high time our places of public resort were rendered appropriate to the wants and condition of the public. We trust that, in laying out the Victoria Park somebody who knows his business will be employed, that there will be no parsimonious restrictions of money or means to render it worthy of the sovereign after whom it is named, and that there will be a little less jobbing than there is going forward at Frogmore,

where waste, extravagance, and ignorance, seem in the ascendant, so far as our correspondents in that quarter assert, confirmed as it is by the occasional visits of competent persons, and the opinions of some of the very men employed on the premises. We are more anxious about the Victoria Park than we are about the Queen's new gardens, because Her Majesty can alter until it pleases, whereas, the Victoria Park will be done "once and for aye." There will be no extravagance in keeping a few score gardeners to keep up public gardens as they should be kept up: if it added a hundred thousand per annum to the present expenditure it would give the poorest men in the country an interest in it, and we doubt if any man who could enjoy a garden at home would venture to oppose a grant for such a national and rational purpose.

GARDEN LITERATURE.

THE *Chronicle* has for the last few Numbers been more remarkable for its reports of country shows than for any thing else, and this, to us, is the least interesting of all the garden news. A few odds and ends may be gathered, and that is all we can take. The *Gazette* is, as usual, very stirring—too stirring for us; the most valuable articles are sometimes so peppery, that we are almost afraid to quote it. The article, which has appeared at some length, on horticulture, was the only paper we could have selected for several weeks, and we suppose the editor finds his account in strong writing, or it would not be persevered in. The following is abridged from the *Chronicle*:—

LIST OF FLOWERING PLANTS, FOR FORCING.

First, tribes which naturally bloom through winter; second, retarded autumn flowers; third, early forcing.

- 1 Roses, hybrid China, F R
- 2 .. Perpetual, &c., F R
- 3 .. Provens, tribes, F
- 4 Sweet Briar, F
- 5 Cinerarias, F R N
- 6 Bulbs, chiefly Dutch, as per the London lists, F N
- 7 Hedychiums (see Mr. Beaton's remarks in the *Chronicle*), F
- 8 Lily of the Valley, F
- 9 Amaryllis of all kinds, F N
- 10 Pancratiums, F
- 11 Lachenalias, F N
- 12 Violets, F N
- 13 Azalias, North American, and their hardy hybrids, F
- 14 Azalias, Indian, and their tender hybrids, F
- 15 Rhododendrons, various, F
- 16 Bog plants in general, as Rhodora, Daphne, Kalmia, Erica, &c. &c., F N
- 17 Persian Lilacs, F
- 18 Poinsettias, N
- 19 Gesnera elongata, &c., F N
- 20 Cyclamens, N
- 21 Chinese Primrose, F N
- 22 Geraniums, or rather Pelargoniums, selected by their habits and adaptability, F R
- 23 Euphorbias, R N
- 24 Tropæolum tricolorum, F

- 25 Bletias, F N
- 26 Phaius, F N
- 27 Mignonette, F R
- 28 Mezereon, N
- 29 Hepaticas, N
- 30 Scillas, N
- 31 Helleborus hyemalis, N
- 32 Camellias, F R
- 33 Oranges, F
- 34 Chrysanthemums, R N
- 35 Chorozeas, N
- 36 Calceolarias, F R
- 37 Pinks, F R
- 38 Gardenias, F
- 39 Chimonanthus, F N
- 40 Honeysuckle, F
- 41 Linum flavum arboreum, F
- 42 Ericas, winter-flowering sorts, N
- 43 Ribes sanguineum, F
- 44 Corraens, F
- 45 Cytisus canariensis, and others, F N
- 46 Epacris, F
- 47 Tussilago fragrans, F N
- 48 Pultenaea stricta, F
- 49 Cacti, F
- 50 Justicia salicifolia, F R
- 51 Cyrtopodium, N
- 52 Polygalas, R
- 53 Lechenaultia, R
- 54 Luculia?
- 55 Plumbago capensis and rosea, F R

Abbreviations used:—F, forced flowers; R, retarded summer or autumn flowers; N, natural season of flowering.

Most or all of the above list possess capabilities for blooming through winter or the dull season—say from the beginning of November to the end of March, after which flowers are easily obtained.

Another scrap or two, however, and we have done for this time.

Spirits of Tar.—As requested, I beg to state the result of my experiments with spirits of tar, to preserve peas and beans from the attacks of pheasants. As soon as my first crops of peas and beans began to break through the soil, they were, as usual, voraciously attacked by the pheasants. I procured some spirits of tar, and having diluted it with water, in the proportion of one gallon of the spirit to twenty-four gallons of water, I poured it over the rows of peas and beans with a watering-pot and rose: the pheasants never touched them afterwards. I should add, that the solution appeared *rather too strong for the beans, as some of them turned black after the application*, although they afterwards shot up three or four stalks to a root. I do not think that the spirit acts as a manure; on the contrary, I purposely watered only half of my second crop, and I observed that for some time after *those watered had a sickly yellow appearance*, and did not grow so fast or look so well as those left unwatered, although they produced equally as good a result. Finding my first crop of dwarf French beans to come up very sickly, I examined the roots, and found the cotyledons full of a small species of maggot. Thinking that the spirit of tar might do good, when I

sowed again, before covering in the rows, I watered them with a strong solution of it, and the result was, that they came up very strong and healthy, and the produce was enormous; whilst the first crop gradually dwindled away, and died a premature death.—*J. W. C.*

Under the signature, "Facile," we have mostly something of the marvellous. For instance, he says that on removing an excrescence from an ash-tree, twelve feet from the ground, it was filled with moss, and a live toad, and there was twenty years growth outside the hollow. The toad was lively at first, but we suppose the poor thing found the air too cool, for it became sickly and powerless, but did not die. The following are by the same prolific pen:

Bees.—Mr. John Richmond, of Scorton, near Garstang, took a hive of bees on the 26th of September, 1843, the combs and honey of which weighed 92 lbs. The bees were only put into the hive on June 12, 1843.—*Facile.*

Mummy Wheat.—Some ears of the Egyptian wheat which Mr. Ashcroft showed, attracted great curiosity; they were the produce of a few seeds which had been enclosed with an Egyptian mummy 3000 years ago. The ears have a few awns on the upper ends, and are very open and distant between the grains. The seed has been in his possession three years, and this year he has reaped three sheaves of the corn.—*Facile again.*

Large Egg.—Mr. J. Cook, of Garstang, has a duck of the common species that produced an egg on Monday Oct. 9, 1843, which weighed four ounces and a quarter.—*Facile.*

THE MELON.

A WEALD of Sussex gardener asks, why his Melons do not swell off; he says they are planted in a rich black loam; that the vines are strong, and the foliage of a dark green colour; that they have been watered but twice since planting; that they have shown hundreds of fruit, but as soon as they are seed they die off. Now, in the first place, a rich black loam is a very improper soil in which to grow the Melon; with such a soil there is much more chance of failure than success, even though all the other operations are properly conducted. In fact the most successfully cultivated Melons that ever came under my cognizance were never planted in a soil that could properly be termed rich. It is stated of the Melons in question, that they were watered *only twice* from the time of planting until they were showing fruit by the hundred. Now, we presume that by the time they were in such a fruitful state, they had completely filled the frame in which they grew—which we shall suppose was of the ordinary width, that is, five feet and a half, or six feet; the length is immaterial, as the distance between the hills would be con-

siderably less than the width of the frame—now, the space of time required for the plants to occupy the entire frame could not be less than six or eight weeks. Supposing them to be kept growing vigorously all the time, and should their progress have been but slow (which I am inclined to think must have been the case), they would require nine or ten weeks, or even more. It is almost impossible to conceive how plants grown under glass could exist for such a length of time with only two waterings. It is essential to the health of the Melon that it be grown in a heat of 75, or 70 deg. at least. It may grow at a lower temperature, but it is only inferior kinds that will produce fruit at a lower temperature than that named.

Now, let us suppose that an interval of five or six weeks were to occur without one shower of rain falling, and that the thermometer at the same time was ranging night and day above 70 deg., would we not be apprehensive that our out of door plants, which had an unlimited depth of soil, was in danger of perishing? Certainly all annuals approaching nearly to the nature of the Melon would be supplied, and very properly supplied, with water daily; while the Melon, under far less advantageous circumstances, and whose depth of soil rarely exceeds two feet, is to be left nine or ten weeks with only two waterings. I may be told that it could not be the want of water that caused the failure of the plants under consideration, as they continued to grow, and that their vines and foliage was strong dark green. To this I have to answer, that plants, when placed in circumstances where their supply of food is either scanty or disagreeable, will double their exertions to reach a proper supply of agreeable food; and although there was sufficient moisture in the loam in which the plants in question grew, still, after lying for five or six weeks in a frame comparatively close, it must have become stale, sour, and unwholesome; the roots would naturally press downward in search of something more agreeable, till they reached the dung of which the bed was formed; here they would find sufficient food to keep them in life, but totally unfit for the formation of fruit. It is well known that the fluid elaborated in the formation of fruit is very different from what is necessary to keep the plant in life. The organs of elaboration in the fruit are very fine, and the fluid required by them must be of a very delicate texture. It naturally follows, that if a plant be not supplied with a sufficiency of this essential nourishment the fruit must inevitably perish. T.

GARDENERS' WAGES.

SIR,—I wish to bring the following to the notice of your readers:—Every man who enters upon the profession of a gardener, does so with the

ultimate view of acquiring a sufficient knowledge of his business to qualify him for a master gardener's place. It must, however, be observed, that, as the number of situations bears no proportion to the number of men qualified to fill them, it necessarily follows that a great number of deserving men must remain in a state of probation, perhaps to the end of their lives; and it is appalling to think of the miseries endured by these men, from the time of their apprenticeship until they arrive at such a state of perfection as would warrant them in taking master places. And, after having arrived at such perfection, they see no prospect of an alleviation of their miseries: twelve shillings a-week, and the hope of a better place, is all that they have to subsist upon. It is hope, and hope alone, that makes a good gardener cling to his profession: he sees clearly that by laying aside his respectability, and assuming the habit of a common labourer, he could earn sufficient to ensure at least the necessities of life, and, by a little economy, to save a little to meet the emergencies to which all mankind are liable. This it is impossible to do while he continues a journeyman gardener.

The present rate of wages given to journeymen gardeners in Great Britain and Ireland are as follows:—In Ireland they range from five to seven shillings a week; in Scotland, from seven to nine and sixpence; and in England, from twelve to fifteen shillings, in some places a little more may be given, but they are so few that it would be unfair to admit them in the general view of the question. Besides, places that give more than fifteen shillings, are considered of no importance in the horticultural world; for, strange as it may appear, exactly as the establishment rises in grandeur, and its proprietor in wealth, so does the remuneration of the men (who by their skill and industry add to its beauties) gravitate towards the starvation point; this is a very anomalous circumstance, but which I will explain hereafter. Now any man that feels inclined to think that the young gardener can live and learn anything at the present rate of wages, without any extraneous aid, has only to make himself acquainted with the rates of living in the different countries, and calculate how far the gardener's wages will go in procuring the necessities of life, and the other helps necessary to forward a man in his business. Ireland is bad, Scotland is little better, and England may be termed the bad best of the three; even allowing that in England fifteen shillings were the general pay, what does it amount to? Just to this, that it is the very smallest modicum that will support human life.

ONE IN THE CHISWICK GARDENS.

COLLECTIONS AND RECOLLECTIONS.

GERMINATION OF SEEDS.—From an account read before the Academy of Sciences, Paris, it appears, that a short time since, several tombs were discovered at Monzie, St. Martin Dordogne, the most remarkable circumstance attending which was, that the head of the skeleton was placed on a heap of seeds, contained in a cavity left in the cement, large enough to hold the back part of it. These seeds were sown, and from them have been raised the *Heliotropium Europæum*, *Medicago cupulina*, and *Centaurea cyanus*. Many seeds and bulbs have also, at various times, been taken from the catacombs of Egypt; but it is questionable whether they have ever been found to grow, although they have retained, to a considerable extent, an appearance of freshness. There are many seeds so exceedingly fugacious, that unless they are sown immediately on their becoming ripe, they are destroyed. The seed of the Coffee Tree is one of those which will not germinate if the seed has been separated from the plant more than a few days; and it has been remarked, that all seeds containing much oil, perish far sooner than those which do not.—*Flor. Mag.*

AUTUMN-BEARING RASPBERRY.—At Taplow House, where Mr. Springall was gardener, and for ought I know he is now, they used to grow a variety which came into bearing early in September. The following notice of this fruit and its treatment appeared somewhere, but I know not where:—"In walking round the kitchen garden, I was arrested by the appearance of a fine and full crop of Raspberries just coming in for gathering: this, on the first day of September, I thought a rare thing, particularly as I saw that they were not of the old double-bearing kind. Mr. Springall told me they were a distinct variety from any other, and that he received them, some years ago, from the north; but, nevertheless, that a different kind of treatment was necessary than that of the common mode. It is this:—At the spring season, when the common kinds begin to shoot, these are all cut down nearly to the surface of the ground: the consequence is, that, instead of fruit new shoots are produced, which in the autumn bring forth a crop. However, it is necessary, from this mode of procedure, to keep a constant succession of young plants, as in two or three years at most, the old ones will be worn out: hence Mr. Springall, every season plants out two or three rows of young plants; which plan is, year after year, followed on through the quarter, at the same time destroying the old plants that have become useless. There are, doubtless, many gardeners who are acquainted with the above mode of producing a late crop of Raspberries; but to such as are strangers to it the above may be useful."

THE CACTUS BUSH.—This plant does not assume the shape of a tree till its leaves, which

are about ten inches long, and an inch thick, twist themselves together into a trunk. It affords the singular phenomenon of leaves springing out of a leaf. The leaves are thickly covered with prickles, which, when they get into animal flesh, are with difficulty coaxed out of it. It is much used for hedges in Algiers; but if you should ever come to the south, I exhort you never to let your linen be spread out on the Cactus. An affecting story is told of a Dutch family who had a country house near this city. In the house there were five plump, interesting daughters, who, in an evil hour, gave their garments to be washed, by an ignorant European laundress. She hung them out to dry on these prickly bushes, and such evils were entailed on the lovely wearers of them, that they could not sit nor recline with comfort for a week or two afterwards.—*Campbell.*

IVY UNDER THE DROP OF TREES.—"Finding," observes a correspondent, "that grass could no longer be grown (where a plantation covered the borders), it became desirable to remove the earthy and gloomy appearance of the sides of the walks, and, as a substitute, Ivy was thickly planted in those parts which the grass previously occupied, and in less than two years the surface of the ground was completely covered with a fine rich foliage of the Ivy. The edges of the walks are kept neatly cut from time to time, and the effect of the whole is very good. The above remarks are thrown out under an impression that the cases to which they apply are numerous. Indeed, I have myself witnessed many instances where walks have been carried through thick and shady groves, that the surface of the ground, on either hand, presented nothing but a dreary waste, without a green blade or leaf to enliven the scene; whereas, had Ivy been introduced, patches or festoons of its glossy green foliage would have here and there met the eye, affording a very pleasing contrast to what has been noticed above." Mr. Marnock says, "As an ornamental and hardy evergreen creeping shrub, for covering naked walls and other unsightly objects, the Ivy possesses properties superior to any other plant. It is also particularly well adapted for the use to which our correspondent recommends it, and can be applied with great advantage for a variety of similar purposes. We have seen it used with excellent effect as a division fence between the adjoining gardens of villa residences, oak posts having been fastened into the ground, leaving them about five feet in height and two feet apart, with two cross rails; the Ivy was then trained to cover the whole, and suffered to form a thick and close screen. In small street gardens of a few yards square, whether trained in some architectural form, or allowed to run carelessly over a few red stones, its effect is infinitely superior, as compared with sour and unwholesome clumps of earth, that can neither afford happiness nor

satisfaction to those who witness the withered and dying plants they often contain."

MAGGOT GRASS OF THE UKRAINE.—There is a kind of grass or small plant, known by the botanical appellation of *Polygonum Minus*, which grows abundantly in the deserts of the Ukraine. Towards the end of June, this grass being torn up by the roots, is found to be covered with *worms* or *maggots*, of an oval shape; which become indurated, so soon as they are exposed to the air. When pounded, and steeped in water with a little alum, these worms give out a most beautiful crimson colour, with which the Cossack women dye their thread, and the Russian merchants buy it for their wives, to paint their faces with. The Polish Jews and the Armenians sell large quantities of these dry worms to the Turks; who employ them in dyeing their silks and morocco leather, the tails and manes of their horses, and their own hair, beards, and nails. The name of *Coccus Polonorum* has been given to these worms; which are, in the first instance, however, sold by the Cossacks, both to Polish and other merchants, by the *spoonful*. From experiments made at Moscow, a few years ago, it would appear that a *pound* of these maggots, which cost only a *rouble*, or two and four pence, sterling, yields as much rouge or genuine carmine as half a pound of cochineal, or *coccus cacti*.—*Dampier* in his "Voyage round the World," speaks of them at the same time that he treats of cochineal.

ANCIENT SUPERSTITIONS CONNECTED WITH THE MISTLETOE.—The ancient Britons held the Mistletoe in such regard and reverence, that when the season for its appearance on the oaks of the forest approached, messengers were sent out in every direction to procure the earliest intelligence thereof. Then the Arch-Druid, assisted by the inferior priesthood, went in solemn procession to cut it off with a *golden* bill or knife; and it was carried home in triumph to the principal grove, amidst the rejoicings both of priests and people. The Mistletoe was considered by the Druids to be a sovereign remedy for all diseases to which the human frame is incident: it was also thought to be a preservative against apparitions, or any thing that could be perpetrated by evil spirits. It was supposed to have many other virtues; and it was deemed sacrilege for any one to cut or gather it besides the priests. These opinions and ceremonials respecting the Mistletoe, were not peculiar to the ancient Britons merely, they were also common to all the heathen nations westward to the Hellespont.

THE MUSTARD TREE.—There is a parable in the Gospel of Matthew which states that "A grain of mustard seed is the smallest of all seeds; but, when it is grown up, it is the *greatest* among herbs, and becometh a *tree*, so that the birds of the air come and lodge in the branches thereof." The mustard plant of England by no means answers to this description; but, in the

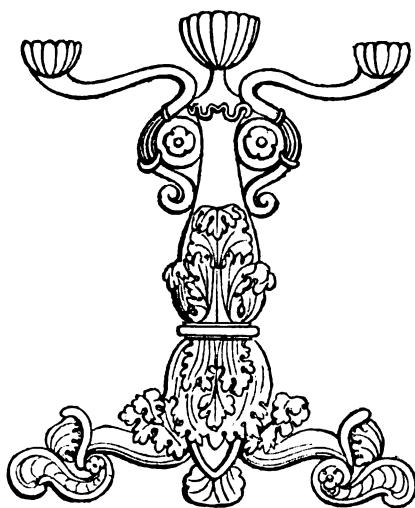
east, there is a species of the *Sinapi*, to which, doubtless, the above passage particularly alludes. This is denominated by Linnæus the *Sinapi Erucoïdes*, whose branches are real wood, as appears by a specimen in the Banksian collection. Lightfoot, Buxtorf, and other historians quote the Jewish Rabbins to the same effect; and, in the Jerusalem Talmud, it is stated that "There was in *Sichi* a mustard tree which had three branches, one of which being cut down, served to cover the hovel of a potter, and yielded three *cabs* of seed." The Rabbi Simeon Ben Chalaphthah also relates that he had in his garden a shoot of the mustard tree, on which, when grown up, he climbed, as if on a fig tree. There being many instances in which a mere shrub, in cold northern climates, becomes a large tree in more congenial latitudes, we cannot doubt, after perusing the above-mentioned authorities, that the mustard plant grows to an immense size in Palestine and other eastern countries; but it is a question of great interest to science, which no modern naturalist has yet solved, whether our humble mustard plant is a dwarf of the *Sinapi* species so pointedly spoken of in the New Testament.

SPONTANEOUS VEGETATION.—There are few horticulturists who have not speculated on the unaccountable manner in which plants spring up on certain occasions; and the old theory of the "*carriage of seeds by birds*," from one country to another, will be found by no means sufficient to illucidate this mystery of nature. After the great fire of London, in the year 1666, the whole surface of the devastated city was, in a short time, completely covered by a luxuriant crop of the *Sisymbrium Irio* in such profusion, that it was calculated the whole of the rest of Europe did not contain an equal quantity. It has been frequently noticed, too, that wherever a salt-spring bursts out of the ground at a distance from the sea, its vicinity speedily abounds with marine plants, although none ever grew there before; also, that when lakes, ponds, and marshes are drained, a new species of vegetation generally springs up spontaneously. When the Danish island of *Zealand* was drained, there were observed great quantities of the *Carex Cyperoides* springing up from the marsh land, although that plant is not a native of Denmark. It is a well-known fact among Scottish farmers, that if quicklime be but put upon land which, from time immemorial, has produced nothing but heather, the heather will be destroyed or killed, and *white clover* will spring up in its place. The last fact connected with spontaneous vegetation, which we shall mention here, is, that on boring for water lately near Kingston-upon-Thames, some of the earth was brought up from a depth of 360 feet: this earth was carefully covered over by a hand glass, to prevent the possibility of any seeds being deposited in it by birds, or otherwise, yet, in a short space, various plants vegetated from it.

FORCING BROCCOLI.—In a gentleman's family where much company is kept this vegetable is in continued use, and the gardener, at some seasons, will find it rather difficult to meet the demand; the following is the most certain plan with which I am acquainted; I have practised it several years most successfully. Sow the seed in the middle of April in any open situation, which I never water; use as many as are wanted for planting out from the edges of the seed bed, leaving the remainder for next year; if the land is very hard through drought, do not let that hinder your planing, for the land wants no digging; take a common farming foulding drift to make holes with; slough the roots of the plants; plant the rows two feet and a half from each other, and each plant two feet apart in the rows; water them well, neither the sun nor the snails will injure them after this, as they are (through age) of such a woody substance, and will come in earlier than those of one year's growth. In January, February, and March, if very sharp frosts, and a dish of white Broccoli is wanted for table, it will be necessary to force a few for that purpose, which is very easily done as follows:—Take a little rotten dung and place next to the stalks of as many as are intended to be forced (selecting the tallest), lay hot manure round the outside of that, which will cause the sap to rise to the flower; and if any spare hand-lights, use them by covering the plants which have been previously tied up, if none, straw will answer the purpose. My brother gardeners will not find this lost labour, as the manure will be already on the land for the succeeding crop. Four successive years I have obtained the first prize, at spring shows, for white Broccoli, cultivated exactly as above stated.—*Allen.*

THE CEDARS OF LEBANON.—Mount Lebanon, which separates Syria from Palestine, is formed like a horseshoe, being composed of four mountainous enclosures or amphitheatres, rising above each other. The *first* abounds in grain and fruit; the *second* is barren; the *third*, though higher, enjoys perpetual spring; the trees being always green, and the orchards filled with fruit, rendering it so agreeable, that it is called the *terrestrial Paradise*; whilst the *fourth* region is so elevated as to be almost always covered with snow, and consequently uninhabitable. The few remaining trees of the celebrated forest of Lebanon, so frequently referred to in the Bible, stands upon uneven ground, forming a small wood. Of the most ancient and best looking, Burkhardt, in 1810, counted only twelve: there were about twenty-five very large; about fifty of a middling size; and upwards of three hundred of the smaller and younger trees. The oldest are distinguished by having their foliage and smaller branches at their tops only; and by four, five, and even seven trunks springing from one base, forming a clump of singular appearance, on account of the crooked-

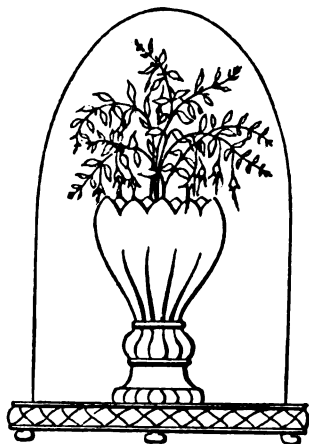
ness of some of the stems. Burkhardt saw no trees whose leaves touched the ground, like those in Kew Gardens. The trunks of the old trees are covered with the names of travellers, so far back as the middle of the seventeenth century. The cedars of Lebanon are very thick and tall, shooting out their branches about ten or twelve feet from the ground, and bearing small cones like those of the common pine. The leaves, which are like those of rosemary, always retain their verdant appearance, and give out a kind of gum, which is used for medicinal purposes. The wood, which is of a pink-brown colour, is solid, incorruptible, and of a beautiful texture.



FLOWERS AND STANDS.

THE taste for Flowers is becoming so general, that artizans are turning it to account in every way, and so fond are many persons of ornament, that they are always seeking an excuse for it. We have already given some sketches of vases, and instructions for their use, in preserving flowers for a long period. We now propose a fashion for supporting either vases or flower-pots, for it will do for either the one or the other, and both may be had of almost endless variety. The material for these stands may be varied, but they will be cheapest, and last the longest, in cast iron, which can be bronzed, or japanned, or painted, according to the fancy of the owner. They will be made in other forms of terra cotta, but where there are arms of slight form, there would be great danger of breaking. In real bronze or lacquered brass they would come dearer, and wood could hardly answer the purpose, because, independently of the price of carving, which would be great, the constant watering of plants would make the stand wet and dry, and it would be pretty sure to split. Cast iron, painted bronze, for out of doors, and

green, or any other colour, for indoors, will be found the best, and there will shortly be no lack of patterns from which to choose them, according to fancy. The stands, however, are equally applicable to vases as flower-pots, and small ones, of the following description, made upon the Elizabethan plan, that is, with a groove, holding water all round the stand, to receive the edge of the glass, will be found very effective if made of an appropriate size, and keep the flowers a long time in perfection. These things can be made as small as a tumbler, to cover a bunch of violets, or as long as a beehive, to cover a nosegay.



THE ONE-SHIFT SYSTEM.

THE advocates for this whimsical fashion find it very difficult to make disciples, and we do not wonder at it. We were last week at Dickson's of Clapham, where there were thousands of struck cuttings of heaths. Of course, the wisdom of a Wood was not to be lost sight of in an establishment where every thing is grown well, and as the trouble is only a little more, and the room no object, Mr. Dickson was a likely person to take advantage of so learned a person's theory. Upon a moderate computation, it required that all his pots and greenhouses must have been increased to twenty times their present size, to make room for his plants upon the one-shift system, and therefore, as there was not time to build twenty times his present quantity before the winter set in, he was obliged to be content to pot them in the old-fashioned way in thumb-pots, and get them into winter quarters quite large enough for their accommodation, much more convenient for getting at, more pleasant to lift about, much sooner packed, and less expensive for carriage. This little settler, so far as nurserymen are concerned, speaks volumes, and it is only fair we should let Mr. Wood speak for himself, as he did in the Magazine of Botany.

1st. As the *secreted matter* (peculiar to all plants) in conjunction with an accumulated sap, is essential to the primary formation of flower-buds, and as this secreted matter is in strict proportion to the quantity of leaves, it may be inferred that an equal formation of leaf-buds is essential to a uniform development of bloom.

2nd. In accordance with a previously stated principle, "that the laws which operate in the arrangement of branches, act simultaneously with respect to the arrangement of flowers," it may be inferred that a system of cultivation which is the most favourable to the production of branches (or axillary growth) will be found the most conducive to a liberal development of blossoms.

3rd. As an excessive vigour is (as a general rule) unfavourable to the formation of flower-buds, in preventing an *accumulation* of sap, it may be inferred that the most perfect system of cultivation will be that which is best calculated to attain a regular development of bloom from any proportionate extent of matured growth.

It appears from the evidence of general practice, that those principles upon which the growth of plants depends, are generally better understood than those which relate to the uniform development of bloom; a fact which is not surprising, when we consider that the causes of the former are such as may be successfully applied, apart from a knowledge of those reciprocal as well as counteracting influences which operate (independently of mechanical means) upon the organs of plants, under every modification of treatment or situation to which they are subjected. But a reason still more obvious remains to be assigned for this difference—namely, that the agencies which lead to a higher and ultimate effect in the attainment of exuberant growth, are invariably found to exert, through the same medium, an opposing tendency upon the predisposing causes of fertility.

It is, however, in proportion to the attainment of a system of cultivation which embodies a *progressive* and accumulated maturity of growth, that an equally progressive step can be made towards the ultimate object of all ornamental cultivation—viz., bloom. The present modes of culture combine more than at any previous period the investigations of science with the deductions of practice, though time-rooted prejudices have hitherto proved obstacles to gaining a knowledge of first principles, and to their application to professional experience. In testimony of the approximation of the present age to a comparatively perfect system of cultivation, there is perhaps no instance of higher interest than that which involves a mode of culture, having for its ultimate object a *constitutional maturity of growth*, by dispensing with the attendant risk, and *restrictive* influence of intermediate shifts from smaller to larger pots.

The principle upon which such a practice is founded is now successfully applied by the most eminent cultivators, and the same principle, so easily adapted to stronger rooting ornamental plants, has also been rendered applicable to those *the most difficult to rear*.

It is well known that growers of plants for public competition have often urged the difficulties and disadvantages attending the purchase of plants, which may have received a treatment in some respects opposite to that which they are desirous to adopt; and in many instances they have considered it essential to the accomplishment of their object, that the plants should have been subject to their system of management from the first or initiatory state of growth. These disadvantages are, however, now being overcome by a mode of potting (subject to a corresponding treatment) which, not unexpectedly, has been a subject of surprise to some, and a stumbling block to others, who, in asserting its impracticability, because contrary to the ordinary method, have failed to apprehend the principles upon which such a course of practice is founded.

The rule which is implied in the principle now adverted to may be defined as follows:—*that plants the most difficult to rear ought to be removed from their youngest state of growth into the largest sized pot in which they are to be exhibited as specimens.* However opposite to prevalent opinion and practice such a rule may appear to those who are unaccustomed to view facts in the light of comprehensive truths, it may nevertheless be shown to be consistent with the first principles of horticulture, and rendered conformable to general practice.

Having stated the rule, the following directions are necessary in the mechanical process of potting. "Take a sixteen or twelve sized pot, place three inches of bottom drainage, and fill up with pieces of peat, from one to four inches square; fill the interstices with the fibrous siftings of peat, and pieces of crocks, till the pot is *quite* full; then plant a seedling or struck cutting of heath of similar habit, give very little water till the little plant shoots freely; and in this treatment is contained the only secret in growing fine specimens."

Such is the most ingenious and easy mode of potting yet offered to the attention of the cultivator; and though the plan of dispensing with intermediate shifts has been recognised nearly fourteen years ago, yet, for this most successful application of the system, the profession is indebted to Mr. D. Beaton, the gardener at Shrubland Park, near Ipswich, one of the most eminent horticulturists of the present day.

This novel and original mode of attaining mature growth in the cultivation of plants may not inappropriately be termed the *accumulative* system, and involves, by its mechanical application of soil, one of the most important and essential desiderata in all systems of cultivation,

without which all efforts to obtain constitutional vigour and fertility must prove abortive—namely, a uniform circulation of moisture.

So much for Mr. Wood.

Really, one would almost fancy there was something novel in the idea of placing a plant in a large pot at once, instead of undergoing its various shifts, as is the custom among the best gardeners. Why, ever since the jars were sent over with foreign grapes, the most humble aspirants would knock a hole in the bottom of one of them, fill it with soil, and stick a little plant in it, there to grow so long as it would, and many a fine myrtle or fuchsia has been seen in a cottage garden, that has been vegetating in a grape jar from the time it was a slip just struck; but all this argues nothing in its favour, and the fact of a plant growing rapidly is only advantageous when it is wanted to grow rapidly, which is not the case with one person in a score, and is extremely inconvenient and ugly while the plant is small and the pot large. In short, there is not one solitary advantage, even if we give those who practice it credit for all they say they can do. The rapid growth is greatly against many kinds of plants, for the foliage is not so close, which is greatly against an epacris, and some kinds of heaths, boroneas, and other hard-wooded plants; and, however they may cause lateral branches and bushy growth by constant stopping, they do not make the leaves nearer to each other on the branches, and in some of the epacris and boroneas we have seen that the vigorous growth has completely taken away that compactness which is observable when plants are grown moderately fast. But, admitting that the system will do all that its advocates assert of it, a general application of it would be impracticable, even if the taste of the public could be so vitiated as to estimate the value of specimens by their size instead of their beauty.

THE DECLINE OF PUBLIC EXHIBITIONS ACCOUNTED FOR.

HOWEVER much we may differ from those who have managed public exhibitions for the last three years, as to the causes of their decline, we are quite confirmed in the opinion we have already expressed, that it was lessening the number of prizes; and supposing that people who have conducted Shows upon a particular system, and wondered why they have failed, could lay aside all kinds of prejudice, would they not admit that we are right? To us nothing can be more clear. Let us examine the matter by an unerring test. Does any body like to be beaten? Does any body like to show when he has not the most remote hope of success? There is no difficulty in answering both these questions in the negative. Well, let us

take Dahlias for one subject. An open class is made, as it was made at Norwich, with a twenty guinea cup for a first prize, and a five guinea one for a second. Two head growers, perhaps even a third might venture, but who else would go to the expense of a journey, and the necessary entries? The thing is not compatible with common sense. The very liberality of the prizes is sure to bring out the two or three head growers, and is as sure to keep away all the rest. But if there were ten prizes, a very middling cultivator would entertain a reasonable hope of coming in somewhere between number one and number ten, and a host would try for it. In Dahlias we may perhaps count on three or four growers, out of whom the first and second may be selected with all but certainty. We can enter into the feelings of exhibitors as well as most people, because we have gone through all the stages of showing, as well as providing shows for others, and we hesitate not to reiterate our conviction, that nothing encourages large exhibitions so much as offering a number of moderate prizes; nothing discourages more than offering one or two large ones. There is no plant or tribe of plants, no flower or tribe of flowers, at all fitted to become the subject of public exhibition, but there is the same disadvantage to provide against. Some one or two persons are at the head of the cultivators. Take Roses, who can stand against Rivers, Wood, Paul, and Lane? We say it not in disparagement of another man's culture, but they have extraordinary collections, they procure every thing that is to be had. Supposing, then, Roses are to be shown, and there were ten prizes, any man would be pardoned for thinking he could win one of them; but reduce the prizes to three, and scores who would compete under other circumstances, would be confident in their own mind that three out of the four above-mentioned would take the prizes, and feeling this, they would decline trying. Take Carnations and Piccotees, Mr. Edmunds, Mr. Barnard, and Mr. Mathews, among amateurs, Mr. Norman, Mr. Wilmer, and Mr. Dickson, among dealers, could, whenever they pleased, take the three head prizes, and if there were but three, none others would, in a general way, try.

There is, perhaps, something like a proof to the contrary at the Surrey Gardens, where there are but three prizes in a class, and yet there are many showing for them. We can easily account for this, in the fact that every now and then a man with inferior flowers stands quite as good a chance as a man with the finest, consequently, the rule does not apply. When Mr. Keynes showed his Standard of Perfection, Dahlia, at the Surrey Gardens, he boasted that there was nothing to come near it in quality—and he was right;—but a party present offered to lay him a wager that his flower would not

take first prize. The party had seen Mr. Burnard—not Mr. Barnard—they are wonderfully different men—go in as a judge, and sure enough Mr. Keynes, who could not understand the thing at all, was dumb-founded at seeing his flower below an inferior one. This kind of thing always ensures a number of inferior exhibitors at the Surrey Gardens. However, we have some reason to believe the members will elect permanent judges, and get rid of this incubus. Let us take Auriculas; who is to stand against Dickson and Wilmer. The same thing applies, unless there be more than two prizes nobody will contend. Then for Tulips, Lawrence and Brown; and so we might run the whole round of the flowers and plants, to show that two or three persons who excel can always dispose of as many prizes, which shakes off young aspirants, who must set up little societies for themselves, and show among one another. It may be said, that by having different classes much of the discouragement is obviated. We deny the fact. In scores of instances there have been only the number of stands, or plants, or flowers required to take the prizes; besides, there is the same disparagement—there is sure to be growers who can command the prizes, and none else are encouraged to try. A multiplicity of prizes is far before a number of classes. There is the constant hope of a prize, and the constant endeavour to get as high up as possible. We approve of the two classes of dealers and amateurs; but when there are further divisions of gentlemen's gardeners, little growers, large growers, growers near town, &c., it is carrying the thing too far. We trust, therefore, that societies of all grades will consider well the propriety of vastly increasing the number of prizes, and diminishing the number of classes, so far as persons go. Let there be, if it can be afforded, an open class, in which dealers and amateurs may compete—let there be a class for dealers exclusively, and a class for amateurs exclusively; but if there be any further classes they should be for some particular classes of flowers, and not of men. Thus, in the great Dahlia Show there will be two novel classes, one in which prizes will be given for the best six blooms of new Dahlias let out in May, 1844, and another of six blooms of striped and tipped flowers fit for borders. However, enough of this for the present. We conclude with saying once more, that the decline of Shows has been chiefly caused by the small *number*, not the small *amount*, of prizes, and we hope societies will keep this in mind when making out their next year's schedules.



RUDBECKIA.

THIS genus would, perhaps, hardly have made its way in English collections in the present abundance of splendid plants for the shrubbery and large flower borders. It is, to say the most for it, a coarse, weedy-looking plant, and when cultivated at all, consigned generally to the roughest part of a garden. There are several varieties, but they are all yellow, coarse, and straggling. The beautiful *Coreopsis* more than supplies its place in the superior beds and borders, and a yellow dahlia, if yellow must be had, is worth the whole genus, which, Mr. David Don, seeing more beauty in it than we can, thought worth dividing, and conse-

quently some of the weeds are called *Centrocampa*, and some *Rudbeckia*. We have given the above simply to show the kind of flower that botanists delight in, chiefly because the florist thinks them not worth removing from their original state of singleness, for if they did they would have it as double as a cabbage rose in a season or two—such is the power of a florist when he brings his practical knowledge to bear up against the book and hortus siccus erudition of the botanist. In short, the florist is for improving, while the botanist does all he can to keep things in a state of uncultivated nature.

THE HORTICULTURE OF CHINA.

FROM various sources do we now learn much respecting China. But few of the modern works afford much more, respecting the horticulture and agriculture of that extraordinary nation, than may be gathered from the three volumes, published as part of the series of the "Edinburgh Cabinet Library;" at all events, nothing of more recent date adds much to the stock of information to be found there. Among much that is interesting, we gather the following particulars respecting that peculiar fancy of the Chinese, the stunting of trees, and upon the

whole, we are indebted to those volumes for much more than any other work has supplied.

The dwarfing or stunting forest trees is a device peculiar to China, and its success is reckoned a test of the gardener's skill. The art consists in forcing the branches of various trees to throw out roots at one or two feet from their extremities, by twisting or wounding them, and applying a ball of compost round a node. The branch is then tortured into a variety of forms, according to the taste of the artist, to give it an appearance of decrepitude, and smeared over

with treacle to attract insects, which erode the bark, cause a premature decay, and give a fictitious character of age. These diseased and distorted plants are then set in pots or frames, and "the surface of the soil interspersed with small heaps of stones, which, in proportion to the adjoining dwarfs, might be called rocks. These are honey-combed and moss-grown, as if untouched for ages," and are intended to maintain the illusion, and to give an antique appearance to the whole. An excuse, however, has been suggested with reference to this absurd custom; for, as Staunton observes, "besides the mere merit of overcoming a difficulty, it has that also of introducing plants into common apartments, from which their natural size must otherwise exclude them;" and, in places where garden-ground is chiefly devoted to the culture of culinary vegetables, it does admit of a still more urgent plea; for, when not introduced into their houses, the Chinese, as we learn from Abel, "appear to have confined the attempts at ornament to their yards," in which he found growing various ornamental plants; such as, *Begonia Evansiana*, *Lagerstræmia Indica*, *Hemerocallis Japonica*, *Cassia sophora*, *Nerium oleander*, *Lychnis coronata*, *Tradescantia cristata*, which, with an undetermined species of *Dianella*, of *Hibiscus*, and *Plumbago*, and *Dwarfed Pomegranates*, were abundantly cultivated in pots. The elegant *Ipomœa quamoclit* is also trained on small frames of trellis-work, and this, from its frequent appearance, is obviously a favourite, although not to be compared to the beautifully peony, and the *Nelumbium speciosum*, or superb *lien-wha*.

The *Pœonia Mou-tan* is much esteemed by the Chinese; indeed, their gardeners claim the merit of converting it from an herbaceous plant to the condition of a shrub. They have several varieties of exceeding beauty; but the yellow-blossomed one, the *Pœonia arborescens lutea*, is by far the rarest and most highly prized. In fact, its existence was for a long while doubted by Europeans; but in the East India Company's collection of drawings there is a figure of it, taken, as Mr. Kerr affirms, from a living plant in one of the mandarins' houses at Canton, in the spring of 1810. The *mou-tans* will not bear the heat of that city, and hence they are annually brought to it in immense quantities from the north, generally arriving, says Mr. Kerr, about the beginning of February. The plants are carried in large baskets, in which they are placed close together in an upright position, without any mould about their roots, and only occasionally sprinkled with water to keep them alive. On being received they are planted in large pots to blow, which they do in a short time; but they never flower at Canton after the first season: a few sometimes survive the hot weather, though in such an exhausted state as never again to flower, and consequently they are

thrown away. There are other ornamental plants more or less cultivated; such as the double jasmine and almond, *air plants*, roses, oleanders, and similar shrubs; but these will be hereafter mentioned.

The nursery-gardens afford another means of judging of the taste of the Chinese in horticultural affairs; and those at Fa-tee, situate on the southern bank of the river, about three miles above Canton, are in much repute for their rare and beautiful plants. But Abel tells us, that although the expectations raised by the high praise of the natives, were not entirely disappointed, still he found that "plants, remarkable for their dazzling colours and singular forms, were more cultivated than those of great rarity."

The Chinese can boast of many excellent edible fruits, some of which, as the *li-tchi*, the *lon-gan*, the *tse-tse*, the *ye-ou*, the *quang-lae*, and *wang-pee*, are peculiarly their own; and others, such as walnuts, chesnuts, pine-seeds, apples, pears, quinces, plums, pomegranates, grapes, cherries, peaches, apricots, water and other melons, oranges, lemons, citrons, shad-docks, they enjoy in common with other nations. These are more or less plentiful in different provinces, but do not seem to be cultivated with any especial care. Indeed, if we may judge from the smaller number of varieties which they possess of any of those fruits, particularly of such as are common to China and Europe, their skill in the management of the orchard and fruit-garden cannot be estimated highly. They have indeed their strange fingered lemon or citron, the celebrated *phat-thu*, and a most delightful orange called the mandarin; but they have only three or four kinds of apples, and seven or eight of pears, and as many of peaches, whilst we have about a hundred varieties of peach, nearly seven hundred varieties of pear, and between one and two thousand cultivated varieties of apple. Of the capability of their native fruits for improvement we know nothing, but with that of the foregoing we are familiar, although something must be allowed for climate; yet it is on all hands admitted that their apples and pears are bad, and their peaches and plums very indifferent.

To the above must be added the *mango* and *pine-apple*, the *cashew*, *betel*, and *cocoa-nuts*; the *service*, and the fruits of *Taxus nuciferus*, *Salisburia adiantifolia*, of *Rhamnus zizyphus*, which latter are called dates; the peduncle of *Hovenia dulcis*, and the seed-vessels of *Hibiscus ochra*, which taste very like the white of an egg.

Their list of pot-herbs, and of other dietetic vegetables, is much more extensive than that of either their flowers or fruits; for the necessity of augmenting in every way the supplies of food for so dense a population has led to the domestication of many plants, which elsewhere are

neglected, or only met with in a wild state. Such, for example, as the shepherd's purse, which the gentlemen of the Macartney embassy saw brought to table as a salad; a cultivated *momordica* forms a substitute for the cucumber; and a kind of thistle is eaten as a relish with rice. "There cannot, indeed," adds Staunton, "be said to be a useless weed in China;" for "there is scarcely a vegetable growing in the empire of which the different uses in the economy of life have not been found out by trials, or accidentally observed in the course of ages by the natives, so as to have enabled them to have succedanea among themselves for the articles which otherwise it would be necessary to procure from foreign countries. Thus, for example, they use the seeds of a species of *Fagara* by way of pepper; the *tsa-tse* supplies the place of the fig; the *Canarium Pinela* of the olive; the *sesanqua* affords a culinary oil, and oil is also expressed from the seeds of sesamum, of hemp, of cotton, of turnip, and a variety of other plants; even the seeds of the *Ricinus* are considered eatable, and castor-oil is not used as a medicine, but as food. They manufacture cloth from the fibres of a dead nettle, and paper from the bark of many vegetables, as well as from the fibres of hemp and the straw of rice. They extract from the *Carthamus* their finest red, very seldom using carmine. From the leaves of a *Polygonum* they make a blue dye resembling indigo, and from those of a *Colutea* an excellent green dye. The cup of the acorn serves them to dye black, and in some places the leaves of the ash are made to answer for those of the mulberry in the rearing of silkworms.

Perhaps the *lien-wah*, or *Nelumbium speciosum*, the sacred bean of the Egyptians, is one of the most extensively cultivated vegetables in China; and, although beautiful, it is there grown for use rather than ornament. Between the Yellow Wall of the imperial palace of Peking and the northern buildings of the city, there is a lake of some extent, which, when Staunton was there, was almost entirely overspread with the splendid leaves and gorgeous blossoms of this plant; and the lakes, ponds, canals, and bogs, are almost everywhere prepared for its production. At one place we read of several hundred acres of swamp being covered with *lien-wah*, and wherever travellers have penetrated, they have found this plant rendering marshes otherwise barren not less beautiful than useful. Its seeds are much relished as food; they are about the size of an acorn, and have a more delicate flavour than an almond. The rootstake, or *Rhizomata*, are also sliced, and in summer served up with ice; while for winter use, they are laid up in salt and vinegar; they are not unpleasant, but in general too fibrous to be much relished by Europeans. *Scirpus (Elocharis) tuberosus* is also extensively cultivated in marshy grounds, as well as the tuberiferous *Alisma*: and the *Trapa*

bicornis renders even the bottom of the ponds and ditches fertile. Of this they have two varieties—the red-fruited and the green. But the *pe-tsai*, or *white herb*, is more generally known, and raised in greater quantities than any other dietetic vegetable. It is a variety of cabbage, and has a delicate flavour, something resembling that of a cos-lettuce. This *white herb* is much relished by foreigners as well as natives, and vast tracts of ground are planted with it everywhere in the neighbourhood of popular cities—especially in the northern provinces, where it seems to thrive the best, and where it is salted for winter consumption; in this state it is often carried southward to be exchanged for rice, to which, when mixed with it, it gives a relish. Staunton says, that when at Peking and Hang-tcheou-sou, it was sometimes difficult to pass on a morning through the crowds of wheelbarrows, and hundreds of carts, loaded with the *pe-tsai*, which were going into those cities. Du Halde observes, that the quantities of this plant sown are almost incredible, and that, "in the months of October and November, the nine gates of Peking are embarrassed with the waggons laden with it." Celery, yams, carrots, turnips, with (*Arachis hypogaea*) the earth-nut, common bean, kidney-beans, as well as a species of *Dolichos*, resembling the latter in taste, but of which the pods are from one to two feet long, are also cultivated, and likewise different kinds of gourd; but the melon tribes are not easily grown. The young subterranean shoots of the sugar-cane and bamboo are cut while tender, and eaten as asparagus—the egg-plant, *Convolvulus serpens* as a substitute for spinach. Some varieties of radish, onions, leeks, shallots, and garlic, are abundant in every garden. *Capsicums* are also grown as spice, and basil as a condiment; and a species of *Sium*, which has to Europeans an offensive odour, is chopped up and eaten as parsley. Like many other nations who use little animal food, these strong-tasted vegetables are much esteemed by the Chinese, and eaten to excess. Indeed Abel says, that two official persons who intruded themselves on him, and whose persons were not the most cleanly, threw off from their bodies a most disagreeable odour, in part attributable to their use of garlic. Other esculent substances are grown, some of which will be mentioned hereafter, for the meaner sort of people, who, living on little else than vegetable food, and being often scarcely able to get enough of that to satisfy the cravings of nature, are not very nice in their selection. The care they take of their little garden is, however, deserving of the highest commendation. No sooner has one thing passed off, than another is sown or planted, or crops previously introduced are ready to come forward, insomuch that the ground is never suffered to lie still. They even hasten the production of the cabbages, by raising them from slips instead of seed; and much inge-

nulty is displayed in their various devices to procure a quick succession. It is indeed to this department of horticulture that their attention is chiefly turned, and in which they principally excel; and it is to the enrichment of their kitchen-gardens that they devote the greater part of their most potent manure.

PROPOSED REVIVAL OF HEARTSEASE SHOWS.

THE subscriptions of nurserymen to give prizes for the encouragement of amateurs seem to have already done something for the dahlia trade, and nothing can be more legitimate than such a mode of giving an impetus to any branch of culture that has been damaged by want of confidence. The pansy may be considered one of the flowers so injured in reputation. The false characters given in public journals, by which a most iniquitous trade in worthless novelties was forced, has so disgusted the majority of amateur cultivators, that some give up growing them in despair, while others who still grow them will not buy a flower at all, until it has come down to the price of a border variety. How to restore the confidence of such people we hardly know, for one of the first questions that are put to us whenever we talk to an amateur that has been duped, is—which are the best twelve we can buy? and here we confess ourselves at a loss for an answer, because, although we can tell them the best we know of, there has been a serious drawback to the exhibition of seedlings in the very fact we have recorded; for when men who have really good varieties, see the merest rubbish praised, they will not place better things on so disreputable a level, and the respectable portion of the heartsease trade has been what lawyers call in *statu quo*, and watermen call “laying on their oars” for a long period, that is to say, the respectable raisers and dealers have been doing nothing but wait for better times. When the *Gardeners' Gazette* was in very incompetent hands, and before our essentially floral publication became known, there was but one authority, if authority it could be called, to which any raiser not competent to form a judgment could apply, and this authority so misled those who knew nothing about it, that scores of things, little better than weeds, were lauded as little wonders, and obtained considerable notoriety. The true florists, who rather doubted the authority, saw it was not their time to push business; the principal persons who were taken in, were fellows of the Horticultural Society, and their friends, a class of believers at that time rather numerous, and in whose disappointment every true florist rejoiced. But florists calculated without their host. Had the persons who were taken in been delighted by their purchase, instead of disgusted with their

disappointment, they might have become ardent admirers of florists' flowers, and enthusiastic cultivators of the pansy. We have taken some pains to encourage this beautiful flower, and our endeavours have been in a great measure successful; but if we were to give a list of the twelve best we know of, we should omit several that have been raised during the interregnum, which all pansy growers regret, and thus do an injustice. In this case, we shall prefer asking the principal growers for lists of the best twenty-four they can serve, and we will give the lists, with their names attached. We will ask the principal raisers for the names of the best they have raised within the last twelve months, and publish them also. And all this is preparatory to forming a pansy class at some popular show, by means of subscriptions offered us by some of the principal growers, that every body who already cultivates the flower may add a few to improve their collections, and those who do not, may select some of the best, upon the warrantry of the dealers themselves. Three of the principal cultivators for sale have given us their names for subscriptions towards a series of prizes, which we intend shall be awarded at the central pink, pansy, and rose show, already established at Slough, and if any cultivator for sale feels inclined to add their names, the greater will be the sum to be competed for, the longer will be the list of prizes, and the more effective the exhibition. In giving us the lists, which we shall hope to publish early in the next volume, we take leave to mention two or three conditions. The varieties which are mentioned as the best shall be consistent with the properties laid down in the early part of this work, that is to say, first—the ground colour of the three lower petals shall be similar; the lower one shall not be a different shade from that of the two side ones. Secondly—the edges shall be smooth. Third—that there shall be a respectable approach to the circle. Fourth—there shall not be a permanent indenture in the lower petal, and they shall not be flimsy. Of course, if we insisted on their being perfection, none could be named, but they ought to have the above qualities to be considered show flowers. We think those who are interested in the trade should answer this call promptly, for the pansy is a flower which persons may grow in very small gardens. Every body can save seed, and raise new ones, and it is to be regretted, that for the last two years and upwards hardly a move has been made that the public can recognise. All pansies with two ground colours, or with rough edges, whatever be their size and brilliance, are border flowers, and can be only recognised as such. With regard to the proposed show, the plan recommended in the *Gazette* will be pursued. A class of thirty-six, with names attached for nurserymen, and a class of twelve for amateurs. A long list of prizes for the latter,

with but a small difference as they descend in the scale, will insure a number of contributors, and that will be our grand object.

THE OBJECT AND PROSPECTS OF THE GARDENERS' BENEVOLENT SOCIETY.

WE can hardly approach the conclusion of our second volume without noticing the only society that has ever been formed for the permanent relief of decayed gardeners and their widows. We have said so much about gardeners' wages, that we hardly know how to reconcile the idea of expecting charitable donations from a poor man whose wages are limited to twelve shillings per week; yet, the very fact which makes him poor and unable to give, towards supporting his aged brother gardeners, renders it impossible to save any thing for his own old age, and calls loudly on those who can afford it to give of their abundance. The Gardeners' Benevolent Society was established in 1840 for the purpose of relieving by pensions, aged gardeners and their widows. It was founded by George Glenny, who, we see by an early prospectus, was a liberal subscriber, but who, except during the sitting of the provisional committee, declined taking office. The subscriptions were not very large, and in consequence of the unpopularity of the secretary, was sadly forsaken. Very few gardeners joined it, and the trade did not take it up with any spirit. Nevertheless, it was thought that a beginning ought to be made, and several pensioners were elected. Few persons can form an idea of the distress which is endured by aged gardeners, whose misfortune it has been to work hard, and have no superior place. The all but impossibility of saving, the gradual decline of strength, the too frequent attacks of rheumatism, lumbago, and many other tormenting disorders; and even when there be nothing but the feebleness of age, what hope is there on this side the grave. The fact, therefore, of snatching one victim from the horrors of distress in old age, is an achievement worthy of notice among those who could, without difficulty, assist in saving many. A few months since the secretary was politely sent to the right about, and a young man of some energy appointed, at a very moderate salary; ever since which the society has been on the advance, and it now bids fair to be second to none of its class. The subscription is but a guinea per annum, the subscriber of which has a right to propose objects of relief, and to vote in every election of pensioners. It would appear that no fairer way of electing objects could be adopted. The committee is supposed to admit no candidate that is not deemed a proper one for the benevolent assistance of the society; the majority of subscribers decide which of all the objects, shall be the fortunate recipients of the society's bounty,

and of these, we believe, the society has now six or eight. We have only to add, that there are but two gardeners' charities, the one just described, and the Philanthropic Society of Gardeners and Amateurs for the relief of temporary distress, of which we may hereafter give a sketch.

COLUMBIAN HORTICULTURAL SOCIETY, WASHINGTON.

THE following is a synopsis of an address delivered by Mr. George Watterston, before the Columbian Horticultural Society, in compliance with a resolution of that Society, and was supplied us by Mr. Hovey, editor of the "Magazine of Horticulture," Boston.

Mr. Watterston began by remarking, that what he should say would consist more of detached facts, than a regular address, which it was not his purpose to make. He premised by observing, that the Columbian Horticultural Society had started into existence some nine years ago, under the most favourable auspices, and been conducted for several years after its organization with the greatest ardour and enthusiasm; that every member seemed desirous to contribute to its advancement and success; that its annual exhibitions were, in a high degree, splendid and gratifying, and that it had been found to be eminently beneficial in producing the finest esculent vegetables, the richest fruits, and the choicest and rarest flowers of the garden and greenhouse, within the sphere of its operation. The idea, he said, of establishing a Horticultural Society in Washington, had been suggested by a venerable citizen, who had devoted several years of his life to the cultivation of the native and foreign grape, with no little success, and that it had been eagerly embraced and carried into effect by a number of public spirited men, who had been led to the undertaking more with a view to benefit their fellow citizens than themselves. He thought that if it were continued with spirit, it was impossible to say to what extent the blessings which the society was calculated to afford might not be enjoyed. He trusted that it would yet be able to boast of the introduction of some new and choice variety of fruit, vegetable, or flower, by the skill and industry of its members, who would thus have the honour of transmitting their names to posterity. He said that our country had already the glory of having introduced some of the finest kinds of fruits, such as the Baldwin apple, the Seckel, Cushing, Wilkinson, Lewis, Andrews and Dix pears, the Boston nectarine, the Bolmer Washington plum the Downer cherry, &c. &c.

He then spoke of the production of ameliorated fruit by alternate planting and grafting, and cited the opinion of Van Mons, that plants in a state of nature, remaining in their na-

tive soil, produced seed that never degenerated, but that in a state of variation the case was different; for that he had found by experiment, that the first seed of a pear tree, sown consecutively for eight generations, taking the seed of the best fruit, produced always more perfect fruit than the preceding generation; that stone fruits, as the peach, &c., produced good fruit in the third generation, and the apple in the fourth; that the tree, from each successive planting of the seed, yielded fruit in a fewer number of years than the preceding one, and that the graft never bloomed sooner than the parent stock from which it had been taken. He thought these experiments should be made, though they might not redound to the advantage of the present generation, because we should be influenced by more patriotic and liberal sentiments, and labour not for ourselves alone, but for those who were to follow us. He then spoke of horticulture as a useful, salutary, and peaceful art, and as the last taste that leaves us; as a science which served to increase our devotional feelings, by unfolding the matchless wisdom of the great Author of Nature in the wonderful organization of the vegetable kingdom; and touched upon the effect of light upon the leaves of plants, and of the peculiar character and importance of these laws in the vegetable economy. He said that the lovely and gorgeous colours in which the floral world is arrayed, was the result of light, and the variety of colours from its separate rays, each differently reflected. Plants, he said, which have been raised in the shade, if taken into the light, and exposed for a short time to the rays of the sun, become as green as those raised in the sun, and when taken into a dark place grow pale, and fade in a few days. Leaves are the lungs of plants; they take oxygen from the air, and emit carbonic acid gas, which is composed of oxygen and carbon. While the former goes off, the latter remains, and converts the sap into a sort of pulp, a part of which consists of carbon. The pulp passes from the upper to the under side of the leaf. The cells where the pulp lodges being yellow, and the carbon of a dark blue, they form together the green colour of the leaves and young bark. Nothing enfeebles a plant more than the loss of its leaves while growing. Their fall, according to Rennie, previous to winter, "is not caused by cold, but in consequence of the vessels at the root of the leaf-stalk becoming gradually rigid and obstructed, so as to prevent the rise of the sap, or the return of the pulp." It is believed that the pulp formed from the sap in the leaf, passes back through the leaf-stalk into the bark, and a portion of it through the bark into the very root. It is the *pulp*, therefore, and not the *sap*, that rises and descends in the plant. The pulp cells are supposed to be designed as reservoirs for spare nutriment matter, like the fat of animals. Plants always turn their stem

and leaves to the light, not towards the air, and that the leaves of many plants go regularly to sleep when the light departs. Pliny and Theophrastus mention the lotus of the Euphrates, as sinking below the water, to rise above it and expand its blossom as the sun returns. The continued motion of leaves, it is thought, serves the purpose of animal respiration and exercise.

He next glanced at the tardy progress of horticulture, which he said had not kept pace with the other arts, though, according to Poiteau, the cradle of agriculture would be found in the garden. "There, like the young Hercules, she first tried her powers, and prepared, like him, to overrun the world, which she speedily cleared of monsters, and bestowed upon man the laws of civilization." He stated that many of the fruits, flowers, and esculent vegetables, which had been obtained by the Greeks and Romans, from Egypt and other eastern nations, were spread gradually over the western parts of Europe, but their progress was slow, and until the reign of Henry VIII. there was scarcely a culinary vegetable cultivated in England, and the small quantity consumed was imported from Holland. Charles II. was the first to introduce French gardening at Hampton Court, and built the first hot-house known in England. Mr. W. attributed to the Catholic clergy the merit of having preserved this art, at a time when every other was neglected. Large and extensive tracts of land, in Italy, Spain, and France, which had been permitted to lie in a state of desolation from the time the Gauls and Saracens made their first incursions, had been restored to fertility by the industry and labour of the monks of St. Bargil and St. Benedict; and Baron Humboldt, he said, had stated, that in the course of a very short period, the Jesuits had spread the knowledge and enjoyment of all our common esculent vegetables from one end of the American continent to the other. But within a few years, horticulture had advanced with rapid strides, and by the establishment of numerous associations, both in Europe and this country, devoted to its encouragement, it promised to attain to high perfection as an art, and to confer countless blessings on the world.

He then spoke of the enemies it had to encounter in the insect tribes, which preyed upon the products of the garden and the orchard, and of such as attack the fruits particularly, he gave a brief description, and spoke of the means adopted to prevent their ravages, at some length. The information he furnished under this head, cannot well be abridged to be useful. Mr. W. next proceeded to describe a few of the esculent vegetables which have long been, and still continue to be, the favourite food of mankind. Of the nature and properties of these, he gave a rapid history, beginning with the *beet*, so called, he said, from the shape of its seed-vessel, which resembled the Greek *beta*. The

Greeks offered it, he stated, on silver, to their god Apollo, at Delphos. It was first brought into England in 1548.

He next spoke of the *asparagus*, which derived its name from the Greek *asparagos*, to spring or sprout. This vegetable, he said, was a native of the United States, and found wild in different parts of the country. Its use as an esculent is of great antiquity, having been first used as a food about 200 years before the Christian era. In the time of Pliny it was carefully cultivated, and attained such a growth, that three stalks would weigh a pound, and sell for a Roman *as*. It is not nutritious, but a promoter of appetite; an English physician recommends it to be eaten at the beginning of dinner. If eaten before, it opens and refreshes the liver, spleen, and kidneys, and puts the body in an agreeable state. Its medicinal virtues have been experienced in gravel, and scorbutic and dropsical diseases, and disorders of the eyes, but it is injurious to those afflicted with gout and dyspepsia. In making asparagus beds, which last for a long time, some being known to have been used for upwards of seventy years, it is recommended to select only the male plants, which throw up a much larger number of shoots than the female, though they are inferior in size to the latter. The *bean* was next described, as deriving its botanical name from the Falisei in Tuscany, who called it *haba*, whence *Faba*. In their feasts dedicated to Apollo, the Athenians used the bean, and the Romans had a festival called *Fabaria*, from beans being offered as an oblation in their sacrifices. They were used among the ancients in the election of their magistrates. A white bean signified absolution, and a black one condemnation, and Phillips thinks that from this circumstance has originated the practice of black-balling candidates for admission into societies, &c. The Macedonians and Thebans used them as a manure, as we do clover, by ploughing them into the ground when they began to bloom. Its expansibility is wonderful. While growing, it has been known to raise a plug clogged with a hundred pounds' weight. Dr. James thinks that young beans are wholesome aliment, and generate good juice, though the general opinion is, that they are flatulent and coarse. The *cabbage* Mr. W. described as being among the oldest vegetables used by man. The Greeks called it *raphanos*, from the resemblance of the seed to those of the radish; by later writers *krambe* or *koramble*, it being thought injurious to the sight. From the goodness of its stalks it was also called *caulis*, hence the name of cole or colewort. The cabbage is constituted by the folding or turning in of the leaves close over each other, and from this circumstance, according to Phillips, arose the term cabbaging, applied to tailors, who, while at work at the private houses of their employers, were often accused of cab-

bagging, or *rolling up pieces of cloth*, instead of the list and shreds which they claim as their due. The Romans, after having expelled their physicians, used it as their only medicine, for every disease, for the space of six hundred years. They, as well as the Greeks, eat it raw, to prevent the effects of wine, clear the brain, and remove intoxication.

Mr. W. then proceeded to speak of the *lettuce* and *mushroom*, the only two other esculent vegetables he described. The former, he said, was highly esteemed by the ancients, and derived its name of *lactuca* from *lac*, milk, on account of the milky juice with which it abounds. The lettuce is said to have been first cultivated in England in 1562, when it was the practice to eat it at the beginning of supper and before meat, because it was thought to sharpen the appetite. Dr. Aston says that the milk of the lettuce is hypnotic, while the root is cooling, diluent, and nourishing; but it is thought to be injurious to weak stomachs, and disagrees with hypochondriac and hysterical persons. It has been asserted that young lettuce may be raised in forty-eight hours, by first steeping the seed in brandy, and sowing it in a hot-bed. The mushroom *fungus* derived its name, he said, from the Greek *spoggos*, or spongy, and its common name from the French, *mousseron*. It is ranked in the lowest order of vegetables, and is thought to assimilate very closely to the animal creation. "The animal flavour of the esculent mushroom," says the authoress of *Sketches of the Physiology of Vegetable Life*, "and the odour of any kind of fungus when burned resembles that of burning feathers; added to the putrefaction to which the whole tribe are subject, and the scent emitted by them in that state do not exclude them from the vegetable kind, but afford additional analogical evidence of the affinity between the two kingdoms." The mushroom, however, produces seed by which they are propagated. These are called the *spawn*, a white, mouldy, and fibrous substance. Some think that the whole mushroom is but one flower, coming out of the earth as a bud, which protects the interior with a veil, until it is ready for fructification, when it expands like other flowers. This vegetable was thought by the ancients to be one of the wonders of nature, because they lived and grew without a root, and shot up without any opening in the earth, and without being sown. They were considered in the dark ages as the work of fairies. The Romans esteemed them as a great luxury, and the most luxurious dressed them with their own hands. It was brought into disuse in Rome after the death of Tiberius Claudius, by Agripina, who is said to have poisoned him with this vegetable. Lord Bacon says that "mushrooms cause the accident which we call *incubus*, or mare in the stomach, and therefore the surfeit of them may suffocate and empoison." They are now used

as a delicious food, and cultivated in England to a great extent. They can be raised by seed, or propagated by roots, which resemble the tubers of the potato. In England they are raised in houses, growing on shelves made of plank or stone, covered with rich earth.—A small shed was large enough to supply the demand of a moderate family. If poisoned by them, the symptoms are first hiccup, then a cold shivering and chilliness over the whole body, and finally convulsions and death. The weight to which mushrooms attain is often enormous, some having been found weighing 30lbs., some 100lbs. each, and it is asserted that some were found growing on the frontiers of Hungary which filled a cart. In Lincolnshire one of the best quality was discovered, which measured three feet four inches in circumference, and two inches thick, and weighed twenty-nine ounces, this fact he said was given on the authority of "Phillips on the Kitchen Garden."

Mr. W. concluded his address by recommending that these reports be continued periodically by other members.

EMIGRATION TO NEW ZEALAND.

FACTS FOR GARDENERS.

THE following straightforward and interesting account of a settlement which has been held out as affording splendid prospects to gardeners, is, so far as our opinion goes, of great value, not less for the absence of botanical knowledge and botanical prejudices on the part of the writer, but also because he has described every thing like a man of business, (not with a view to publication,) as a guide for his own personal friends in this country.

I shall now give you the result of the observations I have made. The statements which are publicly promulgated are, for the most part, so touched with prejudice, that little reliance can be placed in them; unfavourable objects are suppressed, whilst those of an opposite character are so coloured and magnified, that it is vain to seek in it the real facts; it is, however, a system adopted by interested parties in the colony to pursue this course, but daily experience discloses these to have been forced attempts to deceive. On arrival in sight of New Zealand, the appearance is of a singular character, ranges of pyramidal mountains surmounting each other in close succession, till lost in that situated in the middle of the island, generally (at least three quarters of the year) covered with snow; as the land is approached, one is led to conjecture that the whole country is devoid of trees, so uniformly even are these mountains; it is, however, discovered when nearer that the whole face is one dense mass of forest, one tree scarcely overtopping another, and this appearance is carried on through all its unevenness, the sides of the

deep ravines being clothed with trees as closely set as those of the mountain itself or its top: to a lover of the romantic the sight would be delightful; but it affords but discouraging ideas to those whose lot it may be to take up their abode there, and depend upon the produce of the soil. Proceeding towards Port Nicholson, through the Straits, the coast for the most part presents a more inhospitable character; on the North Island a line of sandbeach extends 70 or 80 miles, otherwise, eastward and westward, reefs and rocky cliffs forbid intercourse with the shore, and only under favourable circumstances can be attempted; on the sandbeach a tremendous heavy surf, constantly rolling in, arising I believe from the rapidity with which the tide runs through the stream, occasioning (often most suddenly) a frightful sea, as I can speak from experience, for on entering the straits we encountered a change of wind, which in less than half an hour raised the sea more awfully terrific than any by which we were assailed during the whole passage from England. The entrance to Port Nicholson is narrow, and surrounded by dangers, on both sides reefs of rocks, whilst the high land on both sides render the wind so baffling, that no one can enter or leave the port except under considerable apprehension and anxiety for his safety; the port is so completely land-locked, that it is not without great difficulty that the embouchure can be discovered from sea, but once in the harbour, the utmost safety may be relied upon. A more magnificent spectacle of the kind can scarcely be conceived—so fine a sheet of water, surrounded by high towering mountains, clothed with forest trees of every varied kind in nature, descending to the water's edge, deep ravines intersect the mountains, and break the otherwise monotonous character they present; the harbour is from eight to ten miles in length, somewhat in the shape of an egg, the greatest breadth being about five miles; here is good anchorage throughout, except at the north end, where vessels cannot go nearer than a mile or more from the shore, occasioned by shoal water over a flat sand, which partially dries at low water, outside that the anchorage is good. Here is an embouchure to a river navigable for boats a mile or two, but narrows and shoals rapidly, although it extends a considerable distance into the interior. On the banks of this river it was intended to have fixed the town, but the inundation which the settlers experienced soon after they first landed, induced the site at the south end.

On the borders of this river the land is found to be rich and fertile, and more has been cleared in its vicinity than in all the other parts collectively; but even here, after three years colonization, not 100 acres have been brought into tillage, so great is the labour and expense of clearing land in this country; it is hardly possible to pen a correct account of the nature of

the impediments to the progress of the intending cultivation, and he must have no little courage to attempt the encounter, the risk of body and money. First, the process of felling the timber is opposed by the intervention of sappybach; I believe it may be considered under the same class as canes; it is of rapid growth, and it is almost impossible to say to what length; in its infant state it rises six or eight feet perpendicular, in which state it is extremely brittle, scarcely bearing a blow; it now seeks some neighbouring tree or shrub for support, round which it entwines itself until it reaches the top or some extending branch, when, for want of further means of extending itself upwards, the shoot descends by its own gravity, until it comes in contact with other trees or branches, or entwines itself in some of its own species pendant from them, often forming a net of loose twisted rope; its descent to the ground does not finish its career, for here it sports again among its brethren upon the ascent, and mutually entwines with each other, forming an impenetrable barrier to penetration of the "Bush"—their removal is therefore indispensable—here again no little difficulty occurs, and much time occupied—from their extreme flexibility, they yield not to the blow of any instrument, however sharp; the usual mode therefore is, to cut them by hand, and thus make a passage, but this is all that can be done. They cannot be detached from the trees beyond reach—they must fall with them. The sappybach itself in full growth, at the root, is from three quarters to an inch in diameter, and continues this size for some twenty or thirty feet, after which it reduces itself to about the thickness of a large finger, as do the numerous ramifications while pursuing a similar caprice, as the parent stock extends, branch after branch, defying the eye to follow its trace. It is impossible to say to what length they grow. At spaces from fifteen to twenty feet they throw out shoots; these shoots throw out others, and so on to an infinity, but taking the parent root, and divesting it of all the shoots, I feel I am quite within the mark, if I set it at very considerably more than 200 feet—I believe I should not exaggerate if I said 300. They are not much used, except for securing thatch on houses, and making a sort of hurdle work to form the sides of the native houses, which are afterwards daubed and coated with clay; they are jointed like the sugar cane, and at about similar distances, but from their propensity to attach themselves to any surrounding object, they are seldom straight at any great distance from the root, or they would not be amiss for walking-sticks, being very light. The timber almost invariably is of magnificent dimensions, and much of it is of a superior description, but there is a great drawback in respect to many kinds, which to the eye would be applicable to any purposes, as they are

found to be subject to very early decay if exposed to the weather, hence is only fit for under work, or in which purposes they would be free from damp. The timber most sought, is when sawn, to all appearance, pine, but in its growing state is very unlike the pine of Europe, either as regards the trunk, or branches, or foliage. It is true, it attains a very considerable height, without knot or branch, but the bark is smooth, and of a very light colour. The head is small in comparison with the trunk, whilst the branches are small, and terminate in tufts, which, if tied, would form good brooms, both as to size and quality. There is, however, another kind of wood which, when cut, has all the character of deal; this is red when first sawn, but dries into dull brown, and though not soft, works spongy; this is much esteemed for house building and general purposes, and found in great quantities, it attains a very large size, I am told in some parts of the island it has been found as much as ten feet in diameter, but I have seen none so large here: 5 or 6 feet is the extent which has come under my observation—the trunk is very short in comparison with its bulk, which only yields to the sawyer, in lengths of from 15 to 20 feet. Large branches there extend themselves, but not obtaining any straight length are seldom converted. The tree itself very much resembles an oak in its growth, but the similarity ceases when the foliage is considered—it is very remarkable, that although the timber trees are of such gigantic dimensions, the leaves universally are most diminutive, few being larger than a tea leaf, whilst the shrubs and the smaller and more slender trees produce leaves of large size, many equal to those of the laurel, which they closely resemble. Another remarkable circumstance I have noticed is the total absence of young trees of the timber kind to supply the place of those now standing, when nature shall have reduced them to decay. I made this observation at Van Deiman's Land and Australia, still there were no localities where timber was not abundant. The vegetable productions indigenous to the country, I believe are very few, indeed it would be difficult to determine if any. The potato has been introduced, and a degenerate kind is now in use amongst the natives, which they generally prize; they resemble the kidney potato and may be eaten undressed, are somewhat sweet and in taste not unlike a carrot or a turnip, and when dressed may be taken for parsnips—a kind of honey in its natural state is obtained by the natives from a plant which takes its root on the branches of large trees, the only situation in which it is found; and here it grows luxuriantly in large tufts, often exceeding a half hogshead in size. The leaves are long, and appear of the lily species, when in blossom, the capsules contain a considerable quantity of thick fluid extremely sweet, of this

the natives are very fond, but as it is obtained with great trouble, and indeed risk it is collected but scantily, and only as a personal gratification. The flax plant, however, from universal utility is beyond conception valuable, as applicable to the wants of the natives; but what its value may arrive at by European ingenuity can scarcely be imagined at the present day. The plant bears little resemblance to the European flax, that of this country being of the lily species, except that it is not bulbous, producing seed, and is not an annual, but continues to vegetate until rooted up; the leaves are precisely like those of the large purple lily in England, but when in full luxuriance grow to the length of eight feet or more, but it is not in this state that it is adapted to produce the fibre; when about four feet, and two years growth is esteemed the best state for the preparing the flax, which is done with astonishing facility and by the simplest mode to be conceived; the leaf is cut about two feet long the lower part next the root is useless, the leaf is then notched across about the middle part, on its outsides with a moderately sharp shell of the muscle kind, the shell is then applied to the other side, the leaf moderately pressed against the edge by the fore finger on the side it was notched, it is then drawn by the other hand, bending the leaf to an angle at the shell, this action raises the coating or the leaf at the notch and it falls off in a flake, the other end undergoes the like process. Both parts however having on the inner side been scraped by the shell to remove the thin coating by which the fibre is covered; the flake on the other side being removed leaves it bare, then the leaves thus prepared are laid in bundles and allowed to dry, (though there is little moisture in the fibres) in this state the duty of the artist is very apparent, for by moderately striking a leaf or two against the hand, the fibres become detached from each other, some of which, with only this action, exhibit a fineness almost rivaling silk; and doubtless the whole of the fibres are capable of subdivision into the greatest minuteness, such is the rapidity and facility with which it can be converted to use, that it has been cut and manufactured into cordage the same day, but if under such a rapid process the article is inferior to what it would be if proper time was allowed it, the cordage is exceedingly strong; how far however, it may be durable is yet to be learnt by experience, but I believe no doubt is entertained on this point; for domestic purposes, as the fabrication of linen, it will prove most valuable from the fineness to which the fibre may be wrought.

The natives make it into baskets, which they do by simply splitting the leaf into strips without any scraping or other preparation, but they soon become useless and rotten from the action of the gummy matter with which the outside

coating is impregnated. They also make thin ropes of it in this state by plating, but these are only for temporary purposes: in a few weeks they become useless from the same cause, but now they are very strong. There are no indications of minerals in this part of the island, but at Auckland, the seat of the government, copper in abundance has been discovered; and I believe the work of mining has commenced with great prospect of success; there, as here, the country generally, as to soil, presents the same character, except where the deposit of decomposed vegetable matter has created a superstratum; it is a hard obdurate clay, almost impenetrable to the spade or mattock, but when burned it readily pulverizes in drying, and when perfectly dry readily reduces into an impalpable powder, which again on being saturated with rain resumes its original character of compactness, though not to so great a degree, and becomes less so as the process of turning is repeated; but it is poor and unproductive, and without some auxiliary in the shape of manure will not be worth the labour of the tillage it requires. The only land available for cultivation is found in the vicinity of rivers, but here are extensive swamps, and every portion of the land bears evidence that it has been formed by the deposit which for ages perhaps has been accumulating from the overflowing of the river. This it appears has been occasioned by various obstructions to its course, and as these are considered to be removable, their inundations may in future be avoided, and the land thus formed converted to the purposes of agriculture; in the Manawater district, this is particularly the case; the river takes a most curious and tortuous course for a distance of seventy to eighty miles (the extent to which it has yet been surveyed), at forty miles it is then only seven or eight from the mouth in a direct line. The various bends in many plains almost unite again with the stream in one place, the isthmus is not 100 yards across, and others not much more considerable. In the former the natives have cut a channel, through which they array their canoes; but as the water is deep on both sides a passage for larger craft might be made without any considerable labour. This river is navigable thus far for vessels of fifty to sixty tons, but the ingress and egress cannot be accomplished at all times by reason of the tremendous surf which almost always sets in on the coast; it is only when fine weather prevails and the wind favourable, that this can be attempted. The same objection occurs in respect to all the rivers (of which this is the largest) in the Straights, and I believe more or less so are the whole coast, nevertheless the impediments to a coasting traffic not being insurmountable an intercourse may be established between that place and this. The banks of the river, the east side which is the boundary line of the Company land in this district have

been surveyed 70 or 80 miles in extent, and the land, the greater part of which has river frontage, has been selected by the settlers to the extent of 20,000 to 25,000 acres, or 200 to 250 sections, but although it is now a year since the first and best selections were made, no attempt have yet been made towards clearing and cultivation. Some twenty or twenty-five persons, there, however, of the labouring classes are employed in collecting pigs from the natives, and a house has been established on the river, having in view the wants of the new comers for timber to construct houses &c.; it has been waiting some time, but for want of demand there, the produce has been sent to this place; still, if this country should ever become an agricultural one, this district bids fair to be the most extensively cultivated, in addition to the preparation of the flax which here grows luxuriantly over a large tract of marshy land, on the opposite side of the river, as well as a great extent of sand hills, which lie between the coast and the available land, two or three miles wide, and extending a great distance along the shore; it is rather extraordinary that this plant should delight and thrive in situation and soil so opposite in their respective character. I cannot find that there are any quadrupeds indigenous to the country, unless a large lizard can be within this term, but it more properly comes under the denomination of reptiles; of these, likewise, there are five, and none deserving notice: birds are very numerous and various in species, the wild duck, similar to those of Europe, are found in all the rivers, and lagoons in great numbers, parrots, several varieties, mostly green and small; a larger bird, however, is found in great numbers likewise; these are of a dark brown colour, the plumage by no means brilliant; it is nearly the size of a small chicken, and excellent eating; they are daily brought to the town by the natives, who obtain from 6d. to 1s. each for them. Wild pigeons are very numerous, larger than any I ever saw in England, and far exceed them in plumage, and for consumption these likewise are brought to town by the natives at the same price as the large parrot called the cawkaw. Some of the smaller birds, the generality of which would exceed the size of a sparrow, are very beautiful, and in the woods sing delightfully, but I have not seen any in confinement except the tui or tooie: these are numerous, and about the size of a blackbird, indeed, they are black, except a few white feathers about the neck, and a curious tuft of white feathers pendant by a fine ligature from under the throat, near an inch in length, at the end of these is the tuft, swayed by every action of the bird, it has obtained the name of the parem bird, from the resemblance of their feathers to a clerical band, they imitate almost every bird in the woods, and when taken young are readily taught to speak, very many have

succeeded in this, and the bird's imitation is very correct, their notes in confinement are very sweet. I said there were no quadrupeds indigenous to the country, I believe I am correct in this, for although there are *now* immense numbers of *wild* pigs, they have at some not very recent period been introduced through foreign agency, I think they were first landed by Cooke, they have wonderfully increased since that time, and from the extensive tract of country which they will ever have to rove over, they can never very considerably lessen in number, notwithstanding since the arrival of the settlers, they have and will continue to draw largely upon the stock. Since I wrote most of the foregoing, I have made an excursion about 60 or 70 miles into the country, and have witnessed the mode of living amongst the natives without any taint from intercourse with the settlers. I resided more than a week in one of their "Pas," partaking with them at their meals, and conforming as far as requisite to all their customs,—truly they are savages, and ferocious ones when excited; I have little opinion of their honesty or forbearance when it may be in their power to lay them aside without detection for their own interest. They are artful in the extreme, but shrewd and intelligent, most apt at acquiring knowledge, though from the absence of cultivation of mind ramble from object to object that it is difficult to fix them. The men are decidedly the most lazy indolent beings on earth, they do little else than eat, drink, and sleep; of all these they partake largely: great eaters, but not particular as to the food; they subsist chiefly on potatoes, of which when their crops are good, they have three meals a day, at each of which they cram their stomachs, till they can no longer take the food then lie down to sleep. The women are nearly as bad as the men, but as the burthen of the week falls upon the former, they are restrained from sensual indulgence; the women slaves (previous taken in battle from other tribes) are cruelly treated, they are truly beasts of burthen and of toil. The men do no work whatever, except to plant and dig their potatoes, and such is their laziness that they do this *sitting* on the ground. Their houses are miserable merely a shelter from the weather, containing not a single article in the shape of table, stool, or of any other description, and they sleep on the ground.

T.

[We must close here for the present, though we shall be happy to resume the subject, not only for its general interest, but for its importance to the particular class which forms a large portion of our readers, who have been reading interesting accounts got up by prejudiced or partial authors.—ED.]

FACTS CONNECTED WITH BOTANY AND HORTICULTURE.

CULTIVATION, &c., OF OPIUM IN TURKEY.—M. Texier, a celebrated naturalist, had the curiosity to visit the opium district near Constantinople, last harvest, for the purpose of observing the mode of cultivating and gathering it by the Turkish farmers. Notwithstanding the reputation of this opium, above all others, for flavour, strength, and medicinal power, that gentleman stated, in a letter to Dr. Sigmond a few weeks ago, that it is adulterated to an inconceivable degree. The sophistication commences with the gathering of the milk, which flows from the incision made in the poppy-head, for the gatherer is instructed to scrape off the epidurmis of the capsule with the inspissated juice, in order to add to the weight and quantity in the first instance. When the several portions of this opium are kneaded together, the Turks actually *spit* into it, in order to make it more uniform in its texture and consistence. In vain did M. Texier remonstrate against so filthy and detestable a practice, and proposed the substitution of pure water. The invariable reply was, "that there was greater *flavour* and *virtue* in human saliva than in water!" When preparing it for the Constantinople market, they knead cowdung, pieces of clay, dirt, and gravel in the lumps; and, after it has reached that city, it is farther adulterated for exportation to the several European ports, by mixing with, and inserting in the lumps, various foreign substances, as pieces of lead, iron, and even old copper coins! Notwithstanding all these disadvantages, it is remarkable that Turkey opium is universally allowed to be vastly superior in flavour and medicinal power to that cultivated in the East Indies, the Mauritius, or any other part of the world. The East India opium is principally exported to China by the British merchants: it is smuggled into Canton, and from thence to other cities, in immense quantities annually, notwithstanding several very severe edicts, which have been issued against its introduction and use by the present emperor.

IMPORTANT DOMESTIC USES OF THE ALOE.—The medicinal properties of the aloe are well known. A species of this extraordinary plant, which grows in Mexico, is applied by the inhabitants to almost every purpose of life. It serves to make *hedges* for inclosures; its trunk supplies *beams* for the roofs of houses; and its leaves are used instead of *tiles*. From the fibrous parts of the leaves they make their *thread*, besides various articles of *clothing* and *cordage*; whilst the spines or thorns are converted into *needles* to sew them. From its juices they manufacture *wine*, *sugar*, and *vinegar*. Some parts of the aloe they *eat*, whilst others they use as *medicine*, *varnishes*, &c. In Jamaica, there is a similar species of

this plant, which supplies the inhabitants with *bow-strings*, *fishing-lines*, and materials from which they weave *stockings* and *hammocks*. The negroes of the western coast of Africa, likewise, make *ropes* and weave *nets* of the fibrous parts of the leaves of another species; and the Hottentots hollow out the stems into *quivers* for their arrows. The juice of the aloe was formerly used in several eastern countries, in the art of *embalming*, and for the purpose of preserving the dead bodies of animals from *putrefaction*. The resinous portion of this juice being insoluble in water, is sometimes used in hot climates, as a preservative to *ships' bottoms* against the attacks of *marine worms*. One ounce of it, mixed with turpentine, tallow, and white lead, is considered to be sufficient for covering two superficial feet of plank; and about *twelve pounds* are enough for a vessel of fifty tons burthen. In the East Indies, the juice of the aloe is used as a *varnish* to preserve wood from the attacks of destructive insects; and *skins*, and even *living animals*, are smeared with it for the same purpose. A beautiful *violet colour* is yielded by the leaves of the Socotrine Aloe, which does not require the aid of any mordant to fix it; and the same juice may also be formed into a fine transparent colour for miniature painting. In Spain, Portugal, and Italy, aloes are frequently set out in rows as *fences* for inclosures. In Algarva, the leaves are used for *scouring* plate, pewter, kitchen utensils, and floors; and when cut in slices, they are used for the *feeding of cattle*. The juice of the fresh leaves is also made into cakes, to be used as *soap* for washing; and this vegetable *detergent* has the remarkable and peculiar quality of making a lather with *salt water* as well as with *fresh*! The fibres of the leaves are separated by the Spaniards and Portuguese into threads, by bruising and steeping them in water, and afterwards by beating them. The process in Portugal is, to place the largest and best leaves on a square board, which the operator presses obliquely between his breast and the ground; he then scrapes with a square iron bar held in both hands; so that all the juices being pressed out, the fibres only of the membranous parts remain: these, when *spun*, are employed for all the purposes to which *thread* can be applied. In Mahometan countries, particularly in Egypt and Turkey, the aloe is symbolical of the performance of religious duty; and pilgrims, on their return from Mecca, suspend it over their doors, to show that they have performed that holy journey.

DURABILITY OF OAK.—The throne of Edward the Confessor is 800 years old; one of the oaken coronation chairs has been in its present situation in Westminster Abbey about 540 years; and the oldest wooden bridge of which we have an account is of oak; it is that famous for its defence by Horatius Cocles, and existed at Rome 600 years before Christ.

THE HOLLYHOCK.

THE Hollyhock is not, and never can be a florists' flower, any more than a horse can be a lap dog. It is essentially an out-door plant. Its properties are almost limited to the form of the plant. A lady would as soon think of having a pig in a parlour, as a ramping spike of Hollyhock in a bouquet; and even a coachman, who on state days is expected to wear a nosegay as large as a cauliflower, would look awkward with six feet of Hollyhock stuck in his button hole. The Hollyhock is a rich and beautiful object in the shrubbery, or at the back of a garden, and the more perfect the plant, the more does it become unmanageable as a domesticated or house plant. The most important characteristic in a good Hollyhock is its form, which should be pyramidal, the bottom to form a fine bush of green leaves, and immediately above the foliage, and all but touching it, the flowers forming a close mass of flower twelve inches through, should commence and gradually lessen in diameter higher up, forming a complete pyramid of bloom all the way. The petals should be thick, the flower round and double, and so close as not to show the stem at all. The leading faults of the present varieties is flimsiness of petal, which causes rapid decay; the small quantity of flowers in bloom at a time, by which great part of the spike is either decayed or green; great length of bare stem above the foliage of the plant; the flowers distant from each other along the stem; watery transparent indefinite colours, and semi-double flowers. These are the most conspicuous faults of very many, and there is no doubt great improvement could be made, and will be made, though we have seen nothing of late years to beat some of the varieties grown thirty years ago. How then is this improvement to be effected? Doubtless by showing for premiums, but not by exhibiting the single blooms, because it is just possible to find a plant whose individual flowers are good, but whose value as a whole is small indeed; for instance: suppose the stem is bare at the bottom, the blooms distant from each other, and only one or two out at a time, this plant would be literally worthless. Again, many varieties have semi-double flowers in general, and yet one or two may be found in the spike so much more double, and so superior to the rest, that nobody could know it to be the same. In short, it is impossible to judge from single flowers whether a variety is good or good for nothing. Such shows might answer the purpose of mere prize hunters, and people who, instead of looking at exhibitions as the means of improvement, have no ideas beyond that of self-gratification, and who concentrate all their notions of propriety in simply making shows "*as fair for one as the other.*" Now this is full of mischief. If we can once bring ourselves to believe that the object of

showing is merely to give men chances of winning prizes, why the sole object which justifies their establishment at all is destroyed; and the sooner a show is destroyed also the better. This is the case with many which are kept so quiet, that hardly any whisper of their existence is heard until just before they take place, when nobody but the managers being prepared to exhibit, the said managers have things all their own way, and though in one sense of the word "It is fair for one as the other," the fact of keeping everybody but themselves ignorant of what is to be shown, until the exhibition takes place, gives the strangers no chance of winning. The proceedings in some societies are very questionable. For instance, a man provides himself quietly with a good collection of Hollyhocks, and when he knows he is able to beat anybody, he proposes a prize for Hollyhocks, of which he urges the beauty, and expatiates on the value. There are one or two in the secret, who (having been buying Hollyhocks only because *he* has been buying), agree to it. The first would be content with one prize for the flower, because he can make sure of it, but the others require two or three more, that they may come in also, and thus we find the Hollyhock raised to the importance of a florists' flower, and even placed before the more important ones, without any other reason than that of suiting somebody's stock. But, if Hollyhocks are to be shown for prizes, and we have not the slightest objection, let them be shown on principle. The only advancement there can be made in the Hollyhock must affect its value as a plant, and not merely its flower. For this purpose the only fair and proper way to show it, is to cut the entire spike with two leaves below the flowers. This will show its properties as a plant, and establish the claims it may have as a whole. For instance, the two leaves will show how near the flowers come down to the foliage, and the spike complete will tell the rest, whereas if the spikes were to be cut without the two leaves, there might be a yard of bare stem left below the flowers. Those who would for an instant tolerate the exhibition of single flowers cannot intend to improve the plant, and must have a motive far from creditable to their honour or their judgment. If people have been asleep upon this subject, we trust we shall have awakened them, and that they will agree with us in this one particular.—No exhibition should be held without its leading object be made the advancement of the science, and all the details of its management be consistent with that one great result.

THE POTATO FROM SEED AS CULTIVATED IN IRELAND.

THERE are several varieties of the potato that do not bear seed; the farmer considers this circumstance to be a sure indication of their being

prolific, to this class the red, white, and crow-cup, lumper, Bangor, and ash-leaf potatoes belong. This circumstance is considered to proceed from a defect in their nature, brought about by hybridizing.

The seed bearing varieties form a very numerous class, amongst which may be found some of the best varieties in cultivation; to this latter class we must look for the perpetuity of the potato. Of late years many valuable kinds have been added to the list of those already had (Through the medium of seed,) but not so many as might be expected, from the want of the necessary encouragement from agricultural institutions, who lavish premiums on objects of far less importance to the country.

The seed should be taken (when ripe), from the best known varieties, and after pressing the capsules, or potato apple, in water between the fingers, so as to separate the pulp from the seed, it is dried in the sun, and so kept until the succeeding spring, when it is sown in rows on a well-manured south border; as they grow, landed, and kept free from weeds, and in a dry season receive repeated waterings.

There are few plants sport into so many varieties as the potato; from the seeds of one particular kind, a numerous family will spring, differing in most instances from the parent in colour, flavour, and habits; some pink, red, white, black, &c., and having blossoms varying as much in colour as the tubers, but all are sure to improve by cultivation, and arrive to full size the second year.

The disorders to which the potato is liable are, dry Rot, Curl, and Scab. The first of these, which is most dangerous, makes its ravages among our old mellow varieties, corroding them as a canker, commencing where some bruise, scab, or wound has effected an opening on the rind or skin of the tubers, and by admitting atmospheric air to mix with the saccharine and other juices of the potato, causes gangrene to set in, and in a few months infects the whole tuber, and it becomes a brown putrid mass of dry rot. (Old varieties of the potato are not so liable to it, when grown on bog, moor, or mountain land.) The potato abounds in a starchy substance, and when cut or bruised there issues a portion of the liquid, and forms an incrustation on the wounded part, impenetrable to the atmosphere; but on the contrary, strong lands which retain amoniacal salts, and that are remarkable for producing gluten, grow potatoes destitute of the necessary quantity of starch, and so dry and mealy that their wounds and bruises remain porous and open to the intrusion of air, to the baneful consequences of dry rot.

The Curl is a disease that a few harvest kinds are subject to, such as *Bangor*, *Red Nose Kidney*, and most of the kidney varieties. It is caused by allowing them to become too ripe before dug out; if taken up whilst in a growing

state, before the stalks wither, and exposed to the influence of the sun until they turn green in the colour, the propensity to curl will be remedied.

The Scab infects all potatoes grown on lands void of fertility, that are worn out or too long under the operation of the plough, and I would not advise a potato crop in such soils. The farmer should endeavour to have his potatoes for seed from moor or mountain soils, and if such cannot be procured, from mellow fresh ones; always avoiding seed from worn out land.

Never plant seed that are pinked, or infected with dry rot; in all such cases a whole or partial failure will be the result: neither should potatoes be cut into sections; it is a misken economy, and should not be practised. Cuts, or scillans, are liable to fail during long drought; whole tubers are not at all subject to such failure. The seed should be chosen at the time of ploughing out, selecting the large for table or market, the small or refuse for pigs and poultry, retaining only for the purpose of seed those a little under the medium size.

The following manures are applicable to the potato crop, viz. slaughter-house, cow-house, general farm-yard and horse stable manure, ground bones, burned earth, forest leaves mixed one-fourth road scrapings, bog silt, with night soil, urine, &c. Lime is not sufficient to produce a heavy crop of potatoes unless on fresh land containing a large portion of vegetable matter, such as roots and leaves of trees, or herbs.

Potatoes thrive in almost every description of well drained land, but best on fresh sandy soils. The old lazy bed or ridge system, should be discontinued, *drilling* is far preferable; as there is considerable gain in point of labour, and quantity in produce, added with the great advantage in preparing the soil for future crops. The land intended for potatoes should be ploughed before the winter, and cross ploughed in spring, after undergoing several length and cross harrowings (and rolling if necessary), by which means the land is freed from lumps, and brought to a proper tilth. The drills should stand three feet apart, and whole potatoes be placed at the bottom, twelve inches asunder, the dung laid at proper distances over the ground, but only as required, at the rate of 40 tons to the Irish acre (if stable), and drop an equal quantity on and round each tuber, taking care to have it well broken free from lumps, and mixed with a little of the drill mould. (This latter operation is better performed by the hands than the fork.) The drills being thus finished let them be closed, and do not suffer the fresh spread dung to be dried by exposure to the sun and air, then pass the roller over the drills, and when the plants are fit for landing, strew guano between the rows at the rate of 1½ cwt. to the acre;

proceed to cut, scuffle, and mould as usual. By this method and attending to the weeding, a most remunerating crop may be obtained.

It takes 147 whole tubers to plant one square perch, or 23,520 to the acre (about 2 tons;) and if each plant only produce 4 potatoes the united weight of which comes to but 3lbs, the return per acre will be 31½ tons. It has been seen that a single tuber produced when highly manured and attended by frequent landing of manure and earth, from 10 to 14lb each; but now that the farmer has the power of calling to his aid guano and other portable manures at the time of the summer landing, a great augmentation in point of produce may be the result.

When the crop is ripe, remove the decayed stalks, run your plough with double winged sock and double mould-board, but no colter, in the centre of each drill; this will expose to view the contents; and a plough, if judiciously managed and properly attended, will take out three acres per day.

Farmers go to considerable trouble and expense in erecting suitable stores for various kinds of grain, but the potato crop in this respect is neglected or badly harvested, or generally thrown into a dry ditch, pit, or some other neglected situation, or heaped in large quantities in some store where heating sets in, or premature growing. The main object in preserving grain is to keep it dry, but this is not sufficient for the potato, it must be kept cool, as it contains in itself a sufficient moisture to cause vegetation. The best store for keeping potatoes is a spacious dry vault at least four feet under the surface of the earth, out of the direct influence of the sun, and it should be placed so as to have sufficient fall for any damp that might occur; the temperature here will be very low, and in such a vault potatoes can be kept perfectly fresh throughout the year.

The potato, independent of its use to man, is far preferable to other vegetables as food for domestic animals, as all, from the full-grown ox to the puny chicken, feed and fatten on it. In stall feeding 30 tons of potatoes produce more fat than 50 tons of turnips; and cattle fed on the former is from three weeks to a month finished and fit for market before those on turnips. *From a paper read before the Society of Gardeners and Stewards, Dublin, by Mr. Owens.*

GARDEN NEWSPAPERS AND GARDEN MAGAZINES.

BY THE EDITOR.

ONE of the most remarkable facts, in our estimation, is the extremely limited circulation of works on horticulture, as compared with the vast numbers of persons more or less interested

in the science. Let us take a walk, or rather many walks, in the suburbs of London, and we find every cottage, however small, has its garden—every villa has either its gardener, or the owner, whose interest in his garden, if he be his own gardener, must be much deeper. Take the vicinity of any large manufacturing towns, and gardens are as thick as houses. In short, millions of persons have a direct interest in horticulture. A great love for flowers, or a desire to grow their own vegetables, or both, pervades masses of the population, and yet no gardening periodical has ever reached a circulation of ten thousand, and we have reason to doubt whether any one has approached, honestly and fairly, so nearly to it as our own. Indeed, of some numbers it would be impossible to say from memory, how many thousand over that number had been sold of the numerous reprints, or from the continued demand, how many more will be required. Yet we consider this work has an advantage over many. There was a predetermination to make it known in every spot on the globe where men congregated together, and it is not too much to say, that no periodical is more widely diffused in the four quarters of the earth. There were other advantages which few works possess besides itself. The miscellaneous character of the articles, the number of contributors among practical men; the exclusive articles on the properties of flowers and plants (from a pen to which, whether rightly or erroneously, the multitude of flower cultivators look up); the total indifference with which costs were and are incurred for real services; and, egotistical though it be, the capacity we flatter ourselves we possess as to the selection of the best from the immense number of papers submitted to our choice, render the work so valuable to those who wish to learn, that, like a good seed on good ground, it is no sooner set than it grows and spreads among all the classes which such works interest.

To go from a magazine to a newspaper; let us look to the original, which was established in 1837, when the gardeners hardly knew the value or the use of it, and when the editor appears to have thought three or four columns out of forty-eight were enough for garden purposes. If we have been told the history rightly, the paper at the end of two or three months, and an expenditure of a thousand pounds, did not reach a thousand in circulation; at the end, however, of two years, and at an expense of another thousand pounds, the circulation reached two thousand, and from that time continued to rise, until the editor who had raised it, for reasons which do not affect the question, abandoned it. A new one started as soon as the original editor was out of the field; and when it was a fair race between Mr. Loudon, who succeeded him, and Doctor Lindley, who, however, was supported by many contributors. It was difficult to say which was the better; but

the readers who had supported the original editor preferred rather to join Dr. Lindley than to uphold the paper their first friend had been, as it were, driven from, and the new journal soon divided the readers of the old one, and "shot ahead." There is a singularity about the paper conducted by Dr. Lindley, which almost takes it out of the pale of class journals. It is neither agricultural, nor horticultural, nor floricultural, in any large degree, but divides half of its columns between the farm and the garden, and the other half is news of the week, given in the ordinary way of ordinary newspapers. The paper is, therefore, popular, and has a circulation among a large class who never see a garden or a farm, or take any interest in one or the other—merely newspaper readers. Unlike a magazine of horticulture, which is exclusively read by persons who take an interest in *the only matter it contains*, a newspaper commands some of all classes, and therefore should excel any magazine altogether in the number of its readers. The proprietors' own account of their own sale is, however, but little over five thousand, of which it is fair to presume one half, at least, are common newspaper readers, some others agriculturally inclined, and the remainder interested to a certain extent in gardening, for if there be any very much interested, they must take other works; none who were at all enthusiastic in horticulture could be content with the small portion devoted exclusively to that science—so small a portion, indeed, that there is very seldom any thing of consequence about the principal ornaments of a garden, flowers; and the fashionable followers of botany spend more in books than plants. The original garden newspaper, to which, after it had nearly become extinct, the original editor returned, has one complete half devoted to the garden, and farming matters often help to fill the other portion. The news of the week is therefore too short to suit any ordinary newspaper reader. None but an enthusiast in flowers, fruits, and vegetables, would look at it a second time; indeed, such is the total indifference of some gardeners and amateurs to news in a garden periodical, and such the indisposition of others to see a newspaper at all, that the *Gardeners' Gazette* has an unstamped edition with horticulture only, which we hear has long since outstripped the stamped edition, although it is only half the quantity, and the same price, as the stamped edition with news. But the circulation of the two editions hardly exceeds that of its rival with only one edition, and the only thing that gives it a preference among advertisers is, that every number reaches an amateur or a professional gardener, who must, to read at all, be an enthusiast, instead of being patronised by the mere readers of news. Here, then, with the advantage of two editions, one stamped and one unstamped, the original paper hardly passes the

rival, and the circulation of the two together but just exceeds, if it exceeds at all, that of the *GARDENER AND PRACTICAL FLORIST* alone. To pass from these three works to other magazines, we must begin with those which are embellished, and among these, Paxton's Magazine of Botany and Maund's Botanic Garden stand immeasurably before all others; then follow Curtis's Botanical Magazine, Edward's Botanical Register, and the Florists' Journal,—all excellent in their way, but in point of circulation the whole possee would not altogether, we believe, make up the circulation of either of the papers.

In glancing over the "things that were," among the garden literature of the past, the most useful of its day, and the cheapest of the whole, was Marnock's Floricultural Magazine. We confess that we have had pointed out to us many valuable articles in that work, that we have occasionally taken one that ought to be better known, and that there is nothing we regret more, on account of the vacancy it left, than the discontinuance of so useful a periodical. Marnock's, however, is not the only magazine that has not been supported to the extent it ought to have been. Loudon's Magazine and the Florist's Guide have not met with the encouragement their merits entitled them to; in fact, we know of no garden periodical which has been supported to half the extent that might be expected, or in any degree to compensate for the great outlay necessary, and the difficulty in procuring writers of sufficient talent to establish such works. We have now shown the difference between the readers, the prospects, the uses, and the value of newspapers and magazines, and assuming, as we do most unquestionably, to be at the head of the garden periodicals in number and influence, we have made remarks which are perhaps more honest than welcome. But, whether the *GARDENER AND PRACTICAL FLORIST* be examined in volumes, or in the monthly numbers, the reader will see on the part of all the writers engaged an untiring zeal in the cause of floriculture and horticulture, unceasing novelty, sound reasoning, a constant labouring to break through the follies and intricacies which those who live by science are constantly throwing in the way of practical knowledge, and a desire to render the knowledge which is necessary to make a man love his garden easy of attainment.

It is worthy of remark, that the properties of flowers as defined in this work are now universally adopted in all respectable Floral Societies, that the articles which have enforced the necessity of uniform decisions, have given a tone to Floriculture all over the kingdom, and that the work has become, to all intents and purposes, the Florist's Text Book. Be it our pride, then, to uphold the character which we have earned, and to maintain the reputation we have acquired.



TRADESCANTIA.

THIS genus is quite as remarkable for the individual name it bears, as for any inherent beauty. It is one of those genera which find little favour in the eyes of a florist, and is commonly known in England under the name of spider wort. It was named after John Tradescant, the gardener to Charles I., a superior botanist and naturalist,

whose museum was of great value, and is in the University of Oxford. *Tradescantia Virginica* is admitted by many as a border flower, but it hardly deserves a place beyond a wilderness. Some are hardy, some greenhouse, and others even stove varieties, but few are cultivated except in botanical collections.

JUDGES OF FLOWERS.

It has been said, and with truth, that the difficulty of procuring good judges of florists' flowers is great, unless we go among some of the humbler class of growers. But we don't know why we should not go to the humbler class, until we have equally good judges among the higher ranks of florists; upon the same principle that a man sets some groom to look out a horse for him, until he can learn how to choose one for himself. There are reasons why the humbler class of cultivators are better judges than their more wealthy neighbours. A poor man has his whole portion of spare time devoted to his flowers; he lives by them, and feasts his eyes on them every spare moment; he knows every feature, every characteristic, of each and all of them; and if he cannot beat (at judging) those men, who have fifty other things of more importance to look after, and who, perhaps, fond as they

may be of them, hardly see their flowers twice during the bloom, it is strange indeed. Let those, then, who want to learn, go where something is to be learned, and not look up to horticultural societies and other barren sources for that which can only be acquired by mixing with the best judges. We do not say there are no exceptions to the rule, because we could mention the names of many who, having early in life mixed with the genuine florists, learned enough to last them their lives; but, unfortunately, this description of men are but little to be depended on, for they are prejudiced against the very class in which they learned all they know, and are as anxious to throw all they learned among their humble teachers to the dogs, as they are to cut the people themselves. However, we say, let judges be selected for their capacity to judge, not for their stations.

CURRANTS.

THE first edition of the Horticultural Society's Catalogue contained *thirty-five* names or varieties; the second, *nineteen*; and now, excluding such as have proved synonyms, and such as are deemed unworthy of cultivation, thirteen remain. With the exception of three new sorts, raised by the late Mr. Knight, only one other good variety had been grown in the Society's garden up to the time the catalogue was issued in December last, a period of *seventeen years*. During the same period, nearly *two hundred* new varieties of the Gooseberry were added to the catalogue, and many of them greatly superior to the old kinds. Had the same attention been bestowed upon the Currant, equally valuable results might have been anticipated. Mr. Knight devoted but little attention to this fruit, but the sorts he raised are desirable acquisitions, one of them being nearly a fortnight earlier than the old kinds, and another having much larger berries. We do not doubt but that the Currant is as susceptible of improvement as the Gooseberry, Strawberry, &c. In an article on the cultivation of the Currant, we alluded to the production of new varieties by means of seedlings, and those who wish to try the experiment, are invited to a perusal of that paper.

Those marked thus * are the sorts most worth cultivating.

1.—BLACK CURRANTS.

1. *Black Grape*.—*Synonym*:—Ogden's Black Grape.

2.* *Black Naples*.—Larger than any other variety of Black Currant. *Synonym*: New Black. [We have fruited it in our garden, and find it to be a large and superior variety.]

3. *Common Black*.—*Synonym*: Cassis (of the French.)

4. *Russian Green*.

2.—RED CURRANTS.

5.* *Red Dutch*.—*Synonyms*: Large Red Dutch, New Red Dutch, Large Red, Large Bunched Red, Morgan's Red, Red Grape, Groseiller Rouge à Gros Fruit.

6.* *Knight's Large Red*.—Larger than the Red Dutch. *Synonym*: Knight's No. 3.

7.* *Knight's Sweet Red Currant*.—Less acid than the others.

8. *Knight's Early Red*.—*Synonym*: Knight's No. 7.

9. *Champagne*.—*Synonym*: Groseiller à Fruit Couleur de Chair.

10. *Striped Fruited*.—Fruit distinctly striped, with white and red. *Synonym*: Grosse Weiss und Rothgestreifte Johannisbeere.

3.—WHITE CURRANTS.

11.* *White Dutch*.—*Synonyms*: New White Dutch, Jeeves's White, Morgan's White, White Chrystal, White Leghorn, Pearl White, (of some.)

12. *Pearl White*.—*Synonym*: Blanc Perlé.

13. *Speary's White*.

Pretty nearly the only good the Horticultural Society has really done, has been the cultivation of fruit trees, and there being a clever head of the department, he has weeded out all the synonyms, for there has been as much knavery in producing old fruit trees under new names, as there has in rechristening flowers. Mr. Thompson's department has been the best looked after, though some fruits have been rather wantonly rejected.

SHRUBBERIES AND FLOWER GARDENS.

IN the arrangement and planting of flower gardens and pleasure grounds, the great object to attain is a cheerful and life-like appearance throughout the year, as well in the gloomy months of winter, as of the more pleasurable seasons of spring and summer. A careful and skilful gardener will always do this, as with the aid of greenhouse or frame plants and flowers brought forward during the winter, and planted out so as to bloom very early in spring, and a regular succession of flowers can easily be kept up until actually cut off by severe frost, when the otherwise cheerless aspect may be relieved by a few well selected evergreens and ornamental fruiting shrubs. Comparatively speaking, however, there are but few gardens possessing the convenience of greenhouse or frames, at any rate there are thousands without them, and therefore it will be desirable to show, that without such advantages, gardens may be made to look cheerful every month in the year, and that too with very little trouble, and no great expense.

To effect this, shrubs, both evergreen and deciduous, must necessarily form the chief feature, and in selecting them attention must be given more particularly to the diversity of foliage, and ornamental appearance of the fruit or berries, than to the period or beauty of the blossoms, although even this object must not be altogether neglected.

The following are a few hardy ornamental shrubs well suited to the purpose, as they look well through autumn, winter, and spring, and present a pleasing and varying appearance from September until May.

HARDY EVERGREENS.

Garrya Elipctica, Andromeda Floribunda, Andromeda Arborea, Accuba Japonica, Mahonia Aquifolia, Arbutus Uneda, Arbutus Rubra, Kalmia Rubra, Kalmia Latifolia, Kalmia Glauca, Lauratinus, Cypruss—varieties, Red Cedar, American Arbor Vitæ, Erica Hibernica, E. Herbacea, E. Australis, Rhododendron Hirsutum, R. Maximum, R. Dorricum, R. Catawbiense, R. Ponticum, R. Hybridum, Ilex Aquifolium, I. Alba Marginata and Picta, I. Aurea Marginata and Picta, and other varieties, Buxus Argentia, B.

Aurea, *Cotoneasta Buxifolia*, *Juniperus Sabina*, *J. Variegata*.

HARDY DECIDUOUS SHRUBS.

Crataegus, varieties, especially *C. Aronica*, *C. Oderaissima*, *C. Orientalis*, *C. Douglasii*, *C. Nigra*, *C. Glandulosa*, *Ribes Sanguineum*, *Ribes Atro Rubens*, *Pyrus Japonica*, *Rhodora*, *Azalias*, varieties, *Persian Lilac*, *Amygdalus Icana*, *Berberis Vulagris*, *Spiræa*, *Daphné Mezereum*, *Rhodora Canadensis*, *Amygdalus Nana*, *Syringa Persica*, *Cytisus*, varieties, &c. &c. J. G.

CONTRIBUTIONS AND SELECTIONS.

ADVANTAGE OF PLANTING FRUIT-TREES ON DECLIVITIES.—Dodart first observed that trees pushed their branches in a direction parallel to the surface of the earth. If a tree stands on a steep it pushes both towards the hill, and towards the declivity; but on both sides it still preserves its branches parallel to the surface. As there is an attraction between the upper surface of leaves and light, I am also persuaded, though not equally certain of it, from experiment, that there is an attraction of the same nature between the under surface of leaves and the surface of the earth. This I consider the true cause of the phenomenon:—I had long observed that the most fruitful orchards, and most fertile trees, are those planted on a declivity, and the steeper it is, though not quite a precipice, the more fertile they prove. It is well known that the spreading of trees always renders them fruitful. On a plain they incline to shoot upwards; and therefore art is employed by skilful gardeners, and applied in various ways to check their perpendicular, and to promote their lateral growth. But this point is obtained on a declivity by nature. There a tree loses its tendency to shoot upwards, and in order to preserve its branches parallel with the surface is constrained to push them in a lateral direction. Hence, an important rule in the choice of orchards and fruit-gardens.—*Rev. D. J. Walker.*

LONGEVITY OF TREES.—Evelyn and others imagine that a space of three or four hundred years forms the natural life of the oak; and there was a magnificent one felled in April, 1791, in the park of Sir John Rushout, Baronet, of Northwick, in Worcestershire, which was judged to be upwards of three centuries old. This oak was perfectly sound in every part, containing 634 cubic feet of timber in the trunk; besides the arms or limbs, which were estimated at 200 feet more. In Gilpin's *Forest Scenery*, there is an account of oak-trees in the New Forest, in Hampshire, which had marks on them of having existed there before the *Conquest*! and the tree in the same forest, against which the arrow of Sir Walter Tyrrel glanced when he killed William Rufus, still remains, though greatly mutilated. In *Lowe's Agricul-*

ture of Nottinghamshire, it is stated that several trees were lately felled in Sherwood Forest, which were found to have cut upon them the letters of I. R., or John Rex; and some of them had a royal crown marked over these letters. Macwilliam, in his *Essay on the Dry Rot*, goes even farther; he says that many trees might be pointed out in this, as well as in other countries, which bear sufficient testimony of being far more than a thousand years of age; and he gives very good reasons for his belief, that several trees now exist, which have been between two or three thousand years in the soil in which they were first planted.

GIGANTIC SIZE OF THE MYRTLE IN VAN DIEMEN'S LAND.—Those who have merely seen the stunted and puny myrtle of northern climes can have but a poor conception of the gigantic size of that tree in southern latitudes. It forms the principal portion of the timber of Van Diemen's Land; and Bischoff, in his *History of New South Wales*, states that its appearance in regard to rough bark and thick foliage, very much resembles our elm; but there are no elms in this or any other country, by any means equal in size to the myrtle of Van Diemen's Land, the same being generally from *one hundred and fifty to two hundred feet* in height, and from *thirty to forty feet* in circumference. The wood, in quality and appearance, is very like cedar.

FLORISTS' FLOWERS.—The following are by respected correspondents, and such communications are generally acceptable, but though we do not use the name unless requested, we have them as areference for our own satisfaction.—ED.

TWELVE WINNING GERANIUMS.—White ground; Alba Perfecta and Albina. Pink ground; Amulet, and Queen of Bourbons. Purple ground; Sir Robert Peel and Juba. Crimson ground; Prince of Wales and Floridum. Rose ground; Akbar and King of Beauties. Then may be added, Princess Alice and Alice Gray, of doubtful colour, such as would require a haberdasher to name. The brightest flower I have seen this season, the most remarkable at all the shows, the most distinct, and seen furthest off, is Rising Sun, which looks brilliant and transparent. Yours, &c.—B.

TWELVE WINNING PANSIES.—Thompson's Eclipse, ditto Miss Stainforth, ditto Corunna, ditto Regulator, ditto Rufus; Brown's Curion, ditto Countess of Orkney, ditto Maid of the Mill; King's Exquisite, ditto Sulphurea Elegans; Cook's Mulberry Superb, ditto Prince Albert. These are carefully selected from all the shows of the year, and will be found upon an average safe show flowers. There are more as good as some of the worst of these, but these will be satisfactory. Your's,—T.

THE DEVIL'S TREE.—The fruit of this tree, which grows in South America, is quite elastic when it arrives at a state of maturity or

ripeness; and when dried by the heat of a sun, it splits with a loud report, scattering abroad its seeds in all directions, like the contents of a hand-grenade when fired. To this apparent sport of nature the tree owes its extraordinary name; and when the reports succeed each other rapidly, as they sometimes do when the sun shines vividly, the effect is similar to the discharge of a battery of artillery, and is heard at a considerable distance. If this fruit be taken from the tree before it is ripe, and be transported to a dry and warm place, as on a chimney-piece, where it may be exposed to a gentle heat, the effect will be similar; and no small amusement will be produced when the explosion takes place, more particularly if the majority of those present in the apartment be ignorant of the nature of the phenomenon.

DESTRUCTION AND PROPAGATION OF ARTICHOKEs.—All the Artichokes in Great Britain were destroyed by the hard frost which occurred in the year 1732, except one single plant, which had accidentally been covered over by a quantity of horse dung. From this solitary plant, which Miller, the author of the celebrated *Gardening Dictionary*, was fortunate enough to meet with, all the Artichokes, which have since been and are now grown in this country, were propagated! This is a striking instance of what care and attention will effect in the cultivation of vegetables.

PERSPIRATION OF PLANTS.—It has been long known that the leaves of plants and trees both give off and imbibe moisture; indeed, Dr. Hales conceived that the same effects occurred with respect to air. In his experiments on the absorption of moisture by and perspiration of plants, he found that the *Helianthus Annuus*, or sunflower, lost one pound fourteen ounces during a fine dry day, and three ounces in the course of a fine night; also, that during a rainy night it gained three ounces. He likewise calculated that the surface of the leaves is to that of the root, as five to two; or, in other words, that a root presenting a surface of two square inches, imbibed as much moisture as five square inches of the leaves; but then the perspiration takes place by the leaves only, so that the plant is continually on the increase as to size and weight, by means of the nutritive matter imbibed by the root.

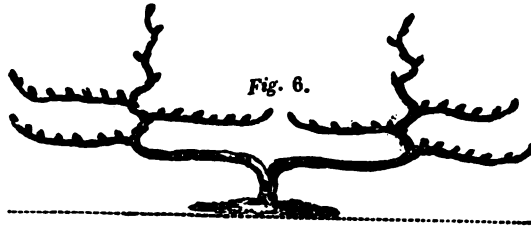
LOVE OF FLOWERS.—Three acres of flowers and a regiment of gardeners bring no more pleasure than a sufficiency. Besides which, in the smaller possession, there is more room for the mental pleasure to step in, and refine all that which is sensual. We become acquainted, as it were, and even form friendships, with individual flowers. We bestow more care upon their bringing up and progress. They seem sensible of our favour, absolutely enjoying it, and make pleasing returns by their beauty, health, and sweetness. In this respect, 100,000 roses, which we look at *en masse*, do not identify

themselves with us in the same manner as even a very small border; and hence, if the cottager's mind is properly attuned, the little cottage garden may give him more real delight than belongs to the owner of 1,000 acres.—*Illustrations of Human Life.*

QUINCE-TREE HEDGES.—At the Cape of Good Hope quince-trees form the usual hedges of the gardens, which purpose they answer exceedingly well, by being treated in the same manner as the quick or hawthorn; and by plashing their long and slender twigs while young, they produce a very lasting fence, which at the same time possesses the very necessary property of being impenetrable to cattle. The hedges are at the proper season loaded with the finest fruit, the flavour of which is excellent; but they are seldom turned to any other account than that of affording a kind of brandy.—*Burchell's Travels in Southern Africa.*—H.

GARDENS AT THE CAPE OF GOOD HOPE.—It may naturally be supposed that in a country abounding with the most beautiful flowers and plants, the gardens of the inhabitants contain a great number of the choicest productions; but such is the perverse nature of man's judgment, that whatever is distant, scarce, and difficult to be obtained, is always preferred to that which is within his reach, and is abundant, or may be procured with ease, however beautiful it may be. The common garden flowers of Europe are here highly valued; and those who wished to show me their taste in horticulture, felt a pride in exhibiting hollyhocks, carnations, balsamines, tulips, and hyacinths; while they viewed all the elegant productions of their own hills as mere weeds. In none of the gardens are any of the beautiful tribe of heaths ever seen under cultivation; and it is a curious fact, that, among the colonists, these have not even a name, but when spoken of, are indiscriminately called *bosjes*, bushes. Although the Dutch language has a word to express heath, yet, whenever I made use of it in conversation with the farmers it seemed always to be unintelligible. *W. J. Burchell's Travels in Southern Africa.*

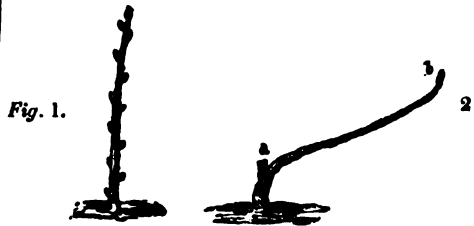
THE JUICE OF THE GRAPE.—The juice of the grape, when subjected to chemical analysis, is found to consist of the following principal ingredients, viz., a considerable portion of water and sugar, a quantity of mucilage, tannin, acidulated tartrate of potash, tartrate of lime, phosphate of magnesia, muriate of soda, sulphate of potash, and a particular liquid substance, which by Chaptal and Proust is termed the *sweet or musco-saccharine* principle, and is regarded by them as the elementary constituent on which the fermentative process depends, but which Cadet, more justly, perhaps, considers as a natural compound of sugar, mucilage, and extractive matter, having the property of fermenting when sufficiently diluted with water.—*History of Ancient and Modern Wines.*



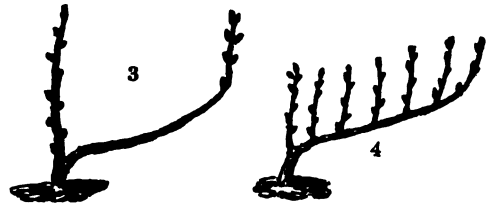
PRUNING AND TRAINING WALL-FRUIT TREES.

In the gardening newspapers there often appears for weeks and months together angry and intemperate discussions in matters of practice, which too frequently enlightens nobody, and, rather than otherwise, wearies the public. There are, however, sometimes controversies which prove more advantageous, and lead to some profitable result. For some time the columns of the *Gardeners' Gazette* have teemed with letters upon the subject of gardeners' education. A Mr. Haywood made somewhat free with the profession, and told them very plainly they were ignorant of the science they professed to live by, and especially in regard to the pruning of fruit trees. This induced some of the best practical gardeners in the country to defend their craft, and challenge Mr. Haywood to show in what respect he was before them. Mr. Haywood, it seems, had published a book, in which he had laid down a system of pruning, the efficacy of which was said to be enormous, and after some weeks of hard fighting in the columns of the *Gazette*, Mr. Haywood has communicated an extract from his work, which it seems is out of print, and the following is the portion which shows the rudiments of his system. Omitting the whole of the controversial matter, Mr. Haywood says:—

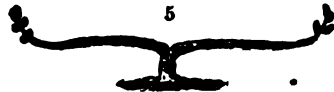
"I do not say that a plant of two year's growth is not more valuable than one of one year's growth, nor that one of three year's growth is not more valuable than one of two year's growth, but I do say that their being cut back, and shortened, one two, or three years, not only does not increase the value of trees, but, on the contrary, it lessens it; it retards their progress to maturity, spoils their beauty in form, and often lays the foundation of premature decay. Then, if I make good this charge, I hope it will prove of some public benefit, and to do it, I give you the following extract from my last book, and not to encroach on your space, I make the extract as short as possible:—'The laws which enable us to force a tree to throw out branches where they are wanted, so as to fill the lower part of a wall or trellis without cutting back, are the 10, 11, 12, and 13. According to the 10th law, if a branch of an erect growing tree be growing in a vertical position (fig. 1), the sap



will flow to its point, and the strongest branch will form there; but if such branch be brought down and fixed in a horizontal position like fig. 2, the sap will no longer flow to its point bud in such quantities, but will form itself fresh channels through the bud that offers the next vertical position at its base *a*; and if all the buds be rubbed off between *a* and *b*, it will form fig. 3. By the same law, if a branch be fixed



in a diagonal position (fig. 4), so as to form an angle of about 45 deg., the sap will flow into all the buds on the upper surface, and form branches of nearly equal size and strength. If, then, at the autumn pruning, fig. 3 be fixed as fig. 5, it



will form fig. 6 the following summer; and if this plan and principle be followed until it reaches the top of the wall, it will cover the space required with branches of equal strength, and in this state maintain itself. Suppose then the object be to raise a peach tree so as to cover 144 superficial feet of walling, with bearing wood, and to enable it to grow so as to furnish the same space both at the top and bottom of the wall, with wood of equal strength, and consequently with fruit, as long as any such fruit tree may be suffered to grow, and be properly sus-

tained with nutriment, the only means by which this can be attained will be to promote its growth, and to train it according to the foregoing description. I need not refrain from stating, that many in looking at my sketches have declared their belief that it was impossible to realize them, and that many who have made the experiment have failed. In answer to the first objection, I have challenged them to an inspection of my trees; and the others have failed from their not comprehending the consequence of and attending to the rubbing off all the buds in the spring, between A and B as in fig. 2; and afterwards not pursuing the same principles, and rubbing off all the buds that push out when they are not wanted to form branches, and which are particularly those which are on the underside of the horizontal leaders—others do not comprehend the use of bending the stems in the serpentine form; but unless this be done, the sap will always flow to the uppermost branches in so large a proportion as to render them too luxuriant, whilst the under branches are starved; as it may be observed each bend giving the horizontal leaders a position almost as vertical as the stem, these, in consequence, draw a much larger portion of sap, and thus an equal division of the sap is maintained, from the bottom to the top of a tree."

With regard to pruning and training in general, there are a few leading principles to be kept in view, and the rest is fancy. We have seen every kind of pruning and training that has ever been practiced or preached, and seen them all succeed, so that we almost get angry ourselves when we observe the rancour with which some men will insist upon their plan being right, and every other person's system being wrong. The less a man weds himself to any system the better. Let him keep in mind the great object of pruning and training, and adopt the plan which will best answer the circumstances under which he is placed. He will not always find trees growing as he likes, nor adapting themselves to any particular mode of training, and the gardener's object should be to make the best of them, by meeting the circumstances in the way most calculated to produce the desired result. The plan of Mr. Haywood, for the treatment of maiden trees may answer very well—there is nothing to prevent it—but fifty other plans might be quite as efficient. Now, we have seen the very maiden bud grow two feet straight up in a very short time, the top pinched out, and lateral branches formed long enough to train in fashion the very first year, and cover the wall as far as they reached, as much as it ought to be covered. This is what we call bringing a maiden tree into bearing and use in quick time. However, Mr. Haywood's paper and diagrams are useful and instructive.

GLENNY'S GARDEN PRACTICE.

DECEMBER.

KITCHEN GARDEN.

THE treatment of all half hardy plants kept in cold frames in winter should be so very similar, that it would seem a waste of time and space to give the same routine for each kind separately, whether it be Lettuces under glass, Cauliflowers, or Salads of any kinds, which are being preserved in frames *through* the winter for planting out, or *during* the winter for use, air on all mild days, and matting, or covering of some kind, during the nights are indispensable, and if it prove frosty, the covering must be kept on until the frost fall has gone. The removal of dead leaves, weeds, and plants that are evidently unhealthy, or have gone altogether off, must be attended to. The same rules must be observed with regard to the Cauliflowers, Lettuces, and other plants under hand glasses, hoops and matting, or any other kind of protection. The sole object of covering at all in this case being to keep off frost, and not to excite growth, that end alone must be looked to, and these rules adhered to all through the winter.

CAULIFLOWERS planted out to head under hand glasses, require that the glasses be only tilted on wet days, as you must regulate the watering required, and too much wet will be injurious. In muggy, damp days, they are often better covered altogether, and they must not be exposed to cold winds. So, also, with plants protected with hoops and mats—they must, in windy weather, be uncovered only on the side the wind does not blow.

Sowing this month is chiefly confined to Salads, such as Mustard and Cress, Rape, Radish, and Lettuce, and Radishes for eating separately; the Radish sown for salad being a different sort to that of which we eat the tap root. This Sowing is useless, except in situations where you can protect it from the effects of frost. The best, of course, is on a slight hot bed, next to this a place protected from the north-east wind, with the full sun, and where you can keep a common garden light over them. Many do a good deal with only the judicious use of hand glasses. You may, however, run the risk of a few Radish and the hardier kinds of Lettuce on a warm border, to be covered with litter against bad weather. If the frost come so severe as to cut it off there is no great loss.

CARROTS, PEAS, and BEANS.—A few of each may be tried, either for succession or a first crop, and but a few, for you are soon over-sown in succession crops if you do not keep in mind how many sowings you are providing for. In small gardens, about as much as would give two good dressings of Peas and Beans are enough for each sowing, because they are ready and done with quickly, and if not gathered spoiled. It is not so with Carrots or Turnips, Cauli-

flowers, and many other crops, some of which keep in perfection a long time, and others are getting better every day for weeks after they are forward enough to begin to use.

CELERY must be earthed up on dry days only, and the earth, being bruised fine, must be pressed in all round the plants, closely, but not be allowed to get into the heart.

ENDIVE may be blanched as wanted, either by tying them up close like a cos Lettuce or an early Cabbage, or by laying a piece of board or flat tile on them, or by covering them altogether with a flower pot with the hole stopped; this latter plan has preserved me many a head of Endive in good order, even through a hard frost; but the hole must be effectually stopped, and the edge of the pot pressed into the ground, and earthed up a little.

CARDOONS may be earthed up like Celery, only that the plants, being separate from each other, each has its mound of earth to itself. I would not, however, give a head of Sea Kale for a load of cardoons, even when in perfection. The earthing must be done as often and as effectually as that of Celery.

ARTICHOKES are no favourites of mine, but those who have any must earth them up, and if they have great anxiety about them, some litter must be provided to cover them up against frost.

ATTEND TO MUSHROOM BEDS, which must be defended from cold and rain, but must not be allowed to get too dry. If they are quite exposed to the weather the covering of straw should be thick enough to throw off the wet, and when it has undergone some heavy showers the top should be removed altogether, to dry, and fresh dry straw put in its place, but it is never advisable to have Mushroom beds out of doors without a roof of some kind over them, if it can any how be avoided.

The ordinary duties of clearing away crops, dressing, digging, or trenching the vacant spaces ready for crops, and leaving them in ridges, or rough dug, comes naturally as the crops are done with. In clearing a quarter of cabbage stalks, it is always worth the trouble of planting out the roots of them in a very small compass for the sake of sprouts in winter, which often supply a dish of tender greens when other kinds of vegetable are either scarce or bad, or both.

WINTER SPINACH should be picked carefully, the largest leaves being quite tender enough for the table, and by this means a small bed will supply a succession of gatherings until the spring Spinach comes in. It should also be carefully cleansed from weeds and vermin, for it affords harbour for snails, slugs, &c.

FORCING ASPARAGUS.—Make a hot bed, as directed in the Practice for October; put about six inches of rich earth (loam and dung) upon the dung; get three year old Asparagus roots,

or, if you have beds in the ground which may be renewed with advantage, dig up all the roots, and select the best for forcing. Let these roots be placed as close together as they can well be packed in this hot bed, with their crowns or buds upwards, seeing that the roots are not absolutely cramped; this, be it remembered, is to be on the surface of the mould, and not sunk or buried at all; this gives them six inches of earth to grow downwards in; then cover them all over alike, two inches above the crowns. The wood frames for Asparagus forcing ought to be fifteen inches deep in front, and two feet at the back. The glasses may be put on at once, but they must be tilted to let the steam off when it appears to come strong. As soon as the advancing buds begin to disturb the surface, add four inches more of dry earth, and having levelled it again, put on the glasses, and you may pile up some hot dung outside, all round the wood frame, but not quite to the top. Be careful to let off the steam, and when there is too much heat, give air. If the bed be in good order in six weeks from the time you plant, you will be able to cut.

—It is the custom to cut asparagus when there is not more than an inch above the ground. This I consider is sacrificing flavour and quality to a very whimsical notion of what is best in appearance. I invariably let them grow three inches above the soil, and cut them three inches below, and I maintain that whatever may be said, or thought of such at market, it far excels every other stage of growth for quantity of eatable vegetable, and the quality of what is eaten. In hotbeds the colour is rarely so good as on that out of doors, and it is often drawn up an unnatural length. All we can do to check the evil is to give plenty of heat, for this will enable us to give air and light, for the fewer hours the covering to protect it from frost is kept on the better; and although in cold weather when the heat is declining it may be necessary to be later in the morning and earlier in the evening covered up; if there be a good supply of hot dung for linings, the asparagus may have all the daylight and much more air. When the heat is declining you must fork away all the dung in front of the frame almost upright even with the front and replace it with a good bank of hot stable dung, which will renew it in a great measure, and in a few days serve the back the same, and after awhile both ends also, then in turn serve the front so again, and go the round, by those means the heat may be kept up till the asparagus roots are fairly exhausted. Those who wish a succession of this vegetable must commence another bed about six weeks after the first is made, and so continue as long as they desire to keep asparagus in cut. There is no difficulty in procuring asparagus roots for forcing, most of the nurseries supply them, and it is one of the few

things which an amateur can hardly fail in forcing, by any other means than burning the roots which is all but impossible if the dung be well prepared by continual turning a fortnight before it is used, and the most ordinary precautions are taken. It is a good plan to thrust a stick into the dung to reach nearly to the middle and leave it there to be pulled out and occasionally felt as a guide to the heat within the heap.

FRUIT GARDEN.

Look well to all your newly planted trees, see that the stakes are firmly placed and tied, and if you find them disturbed, see to their fastenings, and set them to rights. When the trees have been disturbed, the only thing you can do is to tread them firmly into the ground again, but you cannot replace the fibres that have been torn off by the disturbance of the tree, and this shows the necessity of doing all such work effectually at once.

Plant Apricot, Peach, Nectarine, and Cherry trees, if required, and not done before. The kinds, although we have mentioned some before, may be any of the following, for they are all good and all useful :—

PEACHES.—Early Avant, Grosse Mignon, Early Newington, Red Magdalen, Royal George, Noblesse, Late Admirable, and Old Newington.

NECTARINES.—Elruge, Red Magdalen, Violet Hative, Fairchild's Early, White Flanders, Temples, Late Newington, and Red Roman.

CHERRIES.—May Duke, Kentish, Biggareau, Black Eagle, Elton, Florence, Morello.

APRICOTS.—Large Early, Moor Park, Royal Breda, Red Masculine, and for a late one, Turkey.

With regard to the planting, ample directions have been given, and I have mentioned already the importance of fixing them where they are planted by means of stakes, to preserve them from being moved by the wind. It would be well to do all the remaining planting, if possible, this month; for although it may do very well up to the time the buds begin to swell, it is never so well as before the plant has made the least movement.

VINES may be planted; and if for out of door culture, the following are the best sorts to select from :—Black Hamburg, Miller's Burgundy, Black, White, and Grizley Frontignan, White Muscadine and Esperione. These are the very best, and if variety is to be extended, any of the following may be added :—Claret Grape, Malmsey Muscadine, White Sweetwater, Black Prince, and Black Muscadine. In preparing the borders for the Vine, it is almost impossible to make it too rich. Flesh, bones, soap-suds, dung of all kinds, fish, offal, in short, any thing and every thing that can

add fat to the land is good for the Vine, when mixed with good loam. Dig out your border three feet below the surface, and make a drain three feet six inches below the surface, from six to ten feet distance from the wall, then fill one foot in front, and eighteen inches behind, of the bottom, with brick, rubbish, broken pots, oyster shells, chalk, and other dry stuff, ramming it down close and compact, except over the drain, and forming a rough slope, about two feet below the surface in front, and eighteen inches behind, or close to the wall, then fill up with rich loam and dung in equal portions, and if a quantity of bones of any kind be mixed up with it so much the better.

Fill it up a foot higher than the original surface, behind or next the wall, and level with the original surface in front, when this has settled plant your Vines which are most likely pot-plants (or if not they must be carefully removed without bruising the roots) plant them with a trowel with a strong eye put above the ground, and cut away all the rest of it, making the cut just half way between the eye near the surface and the one above it, water it in to settle the roots, leave the border rough on the surface, and leave the Vines with no other protection than a little litter along the bottom of the wall to protect the young plant from frost until the spring. Do not put any crop on the border, nor allow any weeds to grow. If you wish to grow Grapes in perfection, you must let the Vines have the nourishment and not rob them by means of other crops on the surface. I know people with strong Vines in pots are very unwilling to cut them down to a single eye, but I know they wait longer for good Grapes if they get them at all.

The other directions for this month are chiefly limited to an instruction to do whatever has been left undone from last or previous month—the planting, removing, and pruning of fruit-trees and bushes, digging between the rows of the latter, and giving a good dressing will be of service, though most people grow an under crop, and the dunging is given for the sake of that rather than for the benefit of the trees, which would be all the better for it, even where no crops are grown between.

Look over the fruit in the house, and see from time to time how the different varieties come forward ready for consumption, what you cannot use give away, while it is eatable and worth receiving.

Cuttings of Gooseberry, the Vine, Currant, (red, white, and black) and Raspberries, may be taken off and prepared for propagation by being cut close up to an eye in the under part, and formed into 6 or 8 inch lengths. Three-fourths of which may be stuck into the ground, and the fourth left out, these may be placed along the foot of a walk, or in any corner out of the way, but they must be occasionally

watered. They will strike without any further trouble.

FLOWER GARDEN.

Among the first duties of the gardener after the frost has destroyed the beauty of plants in the beds and borders, that of cutting them down or of pulling them up is the most pressing and important; for while the place is littered with decayed flowers, foliage, and stalks, the best garden in the world looks desolate. But the place is only one degree removed from this desolation and dirt when this is done. The next thing is to take off all the leaves, fork over the surface not more than two or three inches deep so that no root shall be damaged, and rake the surface smooth and clean. If means be not desperately short, there is something to be done with the comparatively empty beds and borders, by providing at once for the complete finish of this work, in a manner worthy of a good garden. Pot plants of variegated Holly, Cyprus, Arborvitæ, Acuba Japonica, Pyrus Japonica, Arbutus, Cedar, Laurestinus, Cotoneaster, Fruit-bearing Thorns, dwarf Almonds, Berberies, the Pinus tribe, Phylarea, Portugal and common Laurel, Evergreen Oak and other plants, which are furnished all winter with either fruit or flowers, should be turned out at such distances, and in such varieties, as will best accord with the things already in the ground. It is impossible to conceive the freshness, novelty, and beauty, this new furniture gives to the very best appointed place. There is so much room for a gardener to exercise his judgment, and display his taste, and withal, the altered appearance is so complete a reward for his labour, that it is almost grievous when the principal objects to the expense of so completing the summer appearance of a winter garden. These potted plants advance in growth but little in the winter, and they remove as well in the spring as if they had been in their pots. It is better to bed them out in spring than to pot them again, they go pretty close, and your beds are to be replanted with the summer flowers, as soon as the evergreens are removed, just the same as you would if the evergreens had not been there. The shrubs kept for this purpose must be always pruned into form very carefully, and kept small, excepting of course the Firs, Cedars, Arborvitæ, &c. which make their growth in perfect form. After being bedded out the summer, they will remove into the decayed flower borders in the autumn as well as from pots, while the cutting or keeping them in by pinching off the shoots all over, will make their foliage rich and close on the surface. When we look at the diversity of colour and form in the foliage of evergreen shrubs, their different heights, habits of growth, and other circumstances; and when we consider also that we can trim some up to

dwarf standards and keep others bushy; grow some tall and upright, and others broad and close to the ground, it will be seen that the gardens which are beautifully embellished with flowers in spring and summer, are not one jot more interesting than they are when thus turned into a miniature arboretum in winter. I have carried this into effect so completely in my own concerns that I have seen visitors stare with astonishment (when ushered into a drawing-room which had a look-out upon lawn, shrubbery, and flower garden) at the contrast which the garden at Christmas presented, to the wide expanse of black bare branches, which had met their view in the open country. The only question is the cost, and this is not sufficiently great to let any man of spirit and taste, who keeps a garden at all (if he could see the effect,) forego the luxury. The smaller the great majority of these shrubs are, the better; and there is another consideration, they are actually growing into money from the moment they are purchased. If I could but persuade some of those whose gardens look very bare and miserable, to buy a few dozen well selected pot evergreens, and plant them at suitable distances in the wretched looking beds and borders, which but a few weeks since were sparkling with floral beauties, and are now cold and cheerless, and see the grand improvement and the air of cheerfulness it produces, I should make converts of every one of their visitors between this and March. But as it may be very naturally asked, what is to be done the second year, when these once potted plants are taken up for the summer, I have only to observe that every other year I potted them into pots again, as small as I could get the roots into without damage, and plunged them, taking especial care that they did not want water the summer in which they were confined in pots; but I am quite certain that merely taken backwards and forwards from their summer to their winter quarters, keeping them well cut back, and not allowing any vigorous growth to go on unchecked, they would last for years, and only a few dwarf ones or particular kinds would be wanted to keep up the charm for a considerable period. Those who prefer it may, however, in the first instance, and even after if they please, plunge pots and plants together in the winter beds, and take them up in their pots without the least disturbance, and bed them out again in their pots, only in this case great care must be taken that they never want water, and that the pots be changed once in three years.

The plants naturally keep stunted, and if not attended to would be killed for want of nourishment, for all plants whose roots nearly or quite fill a pot are in great danger if watering be neglected. In my case, I happened to purchase plants which had been potted a long time, and therefore turned them out for the winter beds, and gave them the summer growth in the open

ground, chiefly for the purpose of cutting them hard back into shape before they made their growth; and by going over them as they grew, and pinching off the end of every branch that wanted to outstrip the rest, I made them by the next autumn perfect shrubs. I found in three years they had grown into handsome, and some into noble specimens, and I kept planting the largest (as they outgrew my shifting purposes) in the more extensive portions of the shrubbery, removing for the purpose any ugly or overgrown trees that offended me in the belt or outer border. I placed some of the handsomest on the lawn as specimens, and purchased smaller ones to occupy the front of my favourite winter beds, while the advancing growth of others put them at the back, to take the place of those drafted off for the general shrubbery. I have been more particular with this department than I intended, because I find that there is an attempt on the part of some influential people to introduce a system diametrically opposed to this plan of mine. Whether it is from a disposition to oppose me personally, or one of those insidious attacks on the interests of the profession which are so plentiful of late, or arises from the weakness of an honest but mistaken man, I cannot possibly know; but I am quite sure he is mistaken, and I hope, for the sake of the profession, his example will not be followed. He accomplishes, or professes to accomplish, my object, by cutting, and sticking into the beds, branches of evergreens, trimmed up into the form of shrubs, which he assumes will last green and fresh till March. My opinion is, that it is not a respectable way of accomplishing any object to use deception, and that a gentleman might as well have a conservatory of artificial plants at once, as a bed of sham evergreens. Besides, with all respect for the authority which sets the example at Shrubland, I believe his evergreens would become everbrowns long before March, unless he continued cutting branches to replace the dying and the dead, to say nothing of the havoc made among the shrubs to supply the demand.

If I were planting the border of a shrubbery, which may be considered the four feet next the front, and the front of the belt of trees, which, for the sake of the taste of the man who laid it out, I will suppose to be tallish evergreens, I should consider more the effect of autumn and winter than summer, for which purpose I should, at something like equal distances along the entire length, place *Laurestinus* and *Pyrus Japonica* (red and white). I should care but little how thickly these were planted in a place of some extent, but say the red *Pyrus Japonica* thirty feet apart, red being the most striking colour, and half way between these should come alternately, the *Laurestinus* and the white or pale *Pyrus*. This would make a pale flower and a red one alternately all round the border,

fifteen feet apart, and not one season in fifty would you be without flowers, for the *Pyrus* is an everlasting bloomer, and although the frost cuts off the flowers in a single day sometimes, it does not cut off the buds which have not opened, and three or four sunny days bring out flowers enough to justify us in adopting it as a great favourite, while no ordinary frost will even turn a petal of the *Laurestinus*. We mention this apart from all considerations of the dwarf plants we may associate with them, such as, dwarf China Roses, which will be frequently blooming the best part of the winter, the Christmas Rose, whose large pale blossoms look gay in the midst of frost, and wet, and wind, as if innured to all the roughness of the elements, which seem to make no impression on it. Then Wall Flowers will always throw stray blooms; Pansies will bloom despite of frost, which only affects the open flowers, and in mild winters, straggling blooms among the Primroses, Anemones, and Polyanthus, add greatly to the effect of the winter garden. All this dictates the propriety of almost cramming the flower border towards the autumn with this description of plants, to supply the garden with all the variety that can be got together during those months which, under parsimonious or ordinary management, would look dreary and dull. When these temporary flowers have done their work let them be removed to make way for others, and if worth saving, be bedded out, to be ready against the next year.

What with keeping evergreens to fill up one place, and flowers another, and using both for the beds close to the house, a winter garden would have charms which the summer garden could not boast, and December, January, and February, be cheated of their dullness. But, I mention the *Pyrus Japonica* and *Laurestinus* as permanent occupants of the shrubbery, some others only as things that might be raised every year from seed on purpose for that use, and Anemones, Christmas Roses, China Roses, &c., as things that may be removed and bedded out ready to be used the next year for the same purpose. The same treatment which I recommend for the outer borders may in a less degree be adopted for the borders round the clumps, for the dressed ground should look furnished well all over.

The leaves which fall in shrubberies and, indeed, elsewhere, should be carefully swept up, and removed to a convenient place to decompose—they form a most valuable material in composts for almost every thing. Many persons allow them to rot on the ground, where they are a complete harbour for vermin of various kinds, some of which deposit their eggs upon and among them, and when these are hatched, the living animals commit their depredations at once upon the roots or buds of shrubs, according as they are by nature, ground, or other pests. By

removing the leaves where they can rot into mould, and are away from the cultivated part of the garden, the shrubberies are kept clean and neat. When they are swept away the surface of the ground should be loosened with a small fork, two or three inches deep; and, as nothing is more nourishing than their own leaves, there is no reason why they should not have a dressing of leaf mould all over the surface, but this only applies to those portions in which the smallest shrubs are, for the roots of the larger ones will have long since gone where no top dressing could reach them, and be either doing well, because they are growing in soil they flourish in, or doing ill, because they are in soil they do not like, and are past cure by any medicine that can be offered them. Therefore, fully admitting that nothing is more nourishing to a plant than its own leaves, I would, nevertheless, take the fresh ones away, and bring them some of those already decomposed. It has been said over and over again, that the leaves should be swept together round the trees they fell from, and be left to decompose on the spot. My objections are in part stated—the harbour they afford to noxious vermin; but there is another which is insuperable—the dirty, untidy appearance. The Derby Arboretum is a picture of filth, entirely through an adherence to a theory laid down for some particular trees having been applied to all. The specimens are planted in the grass, with a circle of open mould round them. The grass is constantly mowed, and the cut grass swept into these little beds to rot. The theory is, it prevents evaporation, keeps these little patches moist round the plants, and saves watering. The effects in some of the plants is highly mischievous, and many a patch had lost its tenant when I was there last year. Among the Heaths there was sad destruction—and well there might be—the decaying grass prevented altogether the air getting to the roots, and many specimens were suffering the penalty of sickness, while others had died, and left their labels as legacies. I do not approve of careless and close digging among shrubs, but forking between them, to open the surface, is highly beneficial.

BULBS.—Not a moment's time should be lost in purchasing Hyacinths, Tulips, Narcissuses, Jonquils, Iris, Lilies, and other bulbs for borders, beds, or forcing in pots and glasses; besides the choice getting less every day, the roots are liable to deteriorate in strength. I will not say I have not had a good bloom from bulbs purchased later than this, but I am quite sure I should have had much better had I begun sooner. The same directions which were given for their culture at the proper time must be followed now, except that, as they will not be so well rooted as those which have been planted a month or two, those out of doors will require to be protected with more care, and if hot weather come in the early spring months they will re-

quire water, whereas the others will have gone down after moisture, and require no assistance.

ALL KINDS OF ALTERATIONS—the planting of trees, shrubs, box edging, laying of turf, verges, and lawns, the forming of flower gardens, making gravel walks, and all out of door operations, may go on in mild weather.

IN HARD FROST, attend collecting, distributing, and laying up soils, manures, and dressings of various kinds; but especially collect the top spits of meadow or pasture, whenever you can get it, and if you have no other means, buy leave to cut turfs, and have them cut thick, to lay up and rot for potting composts, for without this you cannot succeed with any thing so well as you can with it.

POTTED SHRUBS, BULBS, &c., intended for forcing, must be taken into the greenhouse, and thence as they are wanted into the hot bed. Small Rhododendrons, Rhodoras, Azalias, Roses, Dutzia Scabra, Daphne indica odorata, and many other dwarf potted plants will succeed. It is best to put them into one of the hot beds, the heat of which has declined a little. Hyacinths, early Tulips, Lachenalias, Crocuses, Narcissuses, and many other subjects, can be thus hastened into bloom.

AURICULAS.—Many persons object to buying these in the autumn, because they wish to see them safe through the winter in the nurserymen's hands. This is wrong; the keeping of Auriculas through the winter is as safe and as simple an operation as any thing in the whole business of a garden. To entitle you to show, you must buy them by the end of February, and there is not the slightest difficulty or danger till that period, so that by not buying now, you allow buyers to pick the stock, and when you apply in February you will find only what more active purchasers have left behind. Buy, therefore, directly; look out plants that are firm in the pot, have a good stout collar or stem, a sound good heart, and have them as soon under your care as possible. If you have not the following sorts, or are without any of them, let them be the first you buy.

GREEN EDGED.

Dickson's Matilda.
Page's Champion.
Lee's Colonel Taylor.
Booth's Freedom.
Stretch's Alexander.
Smith's Waterloo.
Hudson's Apollo.
Dickson's Earl of Essex.

GREY EDGED.

Fletcher's Ne plus Ultra.
Conqueror of Europe.
Dickson's Unique.
Oliver's Lovely Anne.
Kenyon's Ringleader.

Sykes's Complete.
Hedge's Britannia.
Grimes's Privateer.

WHITE EDGED.

Taylor's Glory.
Popplewell's Conqueror.

SELF COLOURED.

Redman's Metropolitan.
Netherwood's Othello.
Dickson's Apollo.
Bury's Lord Primate.

If your object be, in addition to show flowers, to grow a collection to form a stage, you may add the following also.

Cockup's Eclipse, Metcalf's Lancashire Hero, Gorton's Champion, Warris' Blucher, Franklin's Bellona, Gable's Duke of Wellington, Page's Duchess of Oldenburg, Pollet's Highland Boy, Pearson's Badajos, Moore's Violet, Page's Lord Hill, Smith's Britannia, Yates's Lord Collingwood, Foden's Fair Rosamond, and Hay's Lovely Anne.

Auriculas require to be kept in a frame and glass from rain, drip, damp, and cold winds, as well as from too hard a frost. In rainy weather raise the glasses top and bottom that there may be a thorough draft but no wet. The bottom on which the frame stands must be perfectly dry, and it ought to let the water which drains through the pots run off directly, for if it sinks in, the damp arising from it will be injurious. This month they require very little water, and if they are at all moist they require none.

In fine open weather the glasses may be removed from them altogether, and in the evening there ought to be mats or other covering to keep out severe frost.

The same remarks apply to Carnations and Piccotees, which must be constantly attended, and have all the air that can be given in dry mild

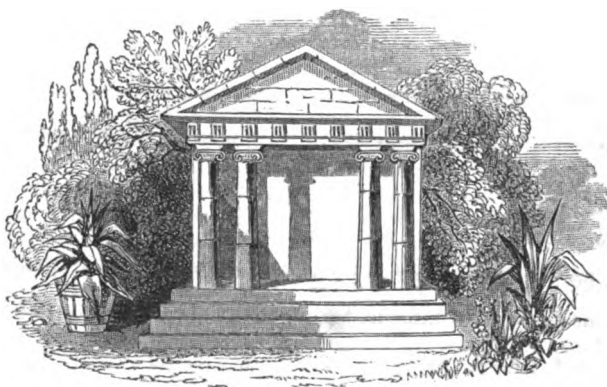
weather. The frames, however, must not be uncovered on rainy days. The dead or decaying leaves must be carefully taken off as they appear, by stripping them downwards, that no part be left on, and, if necessary, a sharp knife must be used. When the weather is wet the glasses should be raised top and bottom, and in all cases both these and Auriculas should be kept near the top of the frame, that they may be near the glass when shut down.

Plants in pits have also to be kept dry, open as much as possible when the fine weather will permit, but closed against wet, frost, and snow. So also those in the greenhouse should have plenty of air in fine weather. The earth at the top of the pots in greenhouses and pits or frames, require that the surface should be stirred, but not deep enough to injure the roots.

Look to pots of cuttings and seeds that may have been sown, and observe whether they are going on rightly.

Such as the pots of Verbena cuttings, China Rose, Petunia, Heliotrope, Fuchsia, and others, some of which will be found to have gone off altogether, and must be taken away, here and there one may be found to have partly damped off; in this case the part should be cut clean away, or the cutting altogether removed. These pots cannot be in a better place than a dry frame or pit, but they require to be occasionally watered, that they may be in moist compost, but not enough to be long wet.

Single Camellias for Stocks may be prepared at almost any time, but as you have perhaps a little bottom heat in some of your frames, by taking pieces of the late year's wood, cutting the bottom close up to a bud, and nipping off the two lower leaves, they may be placed a few in each pot, with a glass over them, and be put in a declining dung bed, where they will all strike, though they will do as well next month.



NOTICE TO SUBSCRIBERS.

THE GARDENER & PRACTICAL FLORIST,

Of which this forms the Second Volume, will be continued in Monthly Parts, price One Shilling, and will be sold by all Booksellers in the Kingdom; but to secure the punctual delivery it is necessary to give an order for it to some Bookseller in the immediate neighbourhood, who will regularly receive it in their London Parcels on the first of every Month. The Editor having arranged for a series of valuable Monthly Papers entirely of a practical nature, and of immediate interest, that will be essentially useful as the season advances, he confidently recommends the Monthly issue.

The commencement of the Third Volume of this now universally acknowledged standard work on Gardening and Practical Floriculture, will be distinguished by several new and important features, besides a continuation of those very popular subjects which have stamped the value of the work.

The articles called Glenny's Garden Practice, which simply comprise his own doings, in his own garden during the period in which he was the most successful exhibitor in the country, will be continued in each Monthly Part, and it is presumed will, when complete, entirely supersede all other works for the use of the gentleman or domestic gardener.

A new feature, which will present some interest, will be offered in the form of a monthly paper on the laying out of gardens to the best advantage, whether a square plot attached to a house, or any piece of ground of whatever dimensions; a feature which cannot but be useful to everybody who wishes to make the most of his advantages, however small. This will be illustrated by sketches of gardens such as are usually attached to small houses, as well as to those of a larger size.

Another new feature, which will greatly increase the value of the work, will be a monthly résumé of all the Horticultural periodicals, with occasional extracts and illustrations when they are required.

In other respects the work will continue what it has been, the repository of the best writings of the best writers, comprising Treatises on the Culture of Flowers, Fruit, and Plants, descriptions of new or newly introduced productions, new practice, and new theories, new implements, and new books. Notices of public and private gardens, the continuation of the Floral Dictionary, the proceedings of Floral Societies, and other public bodies, papers on the Properties of Flowers and Plants, and the usual variety of practical information, will characterize every Monthly Part.





